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THE BUILDER

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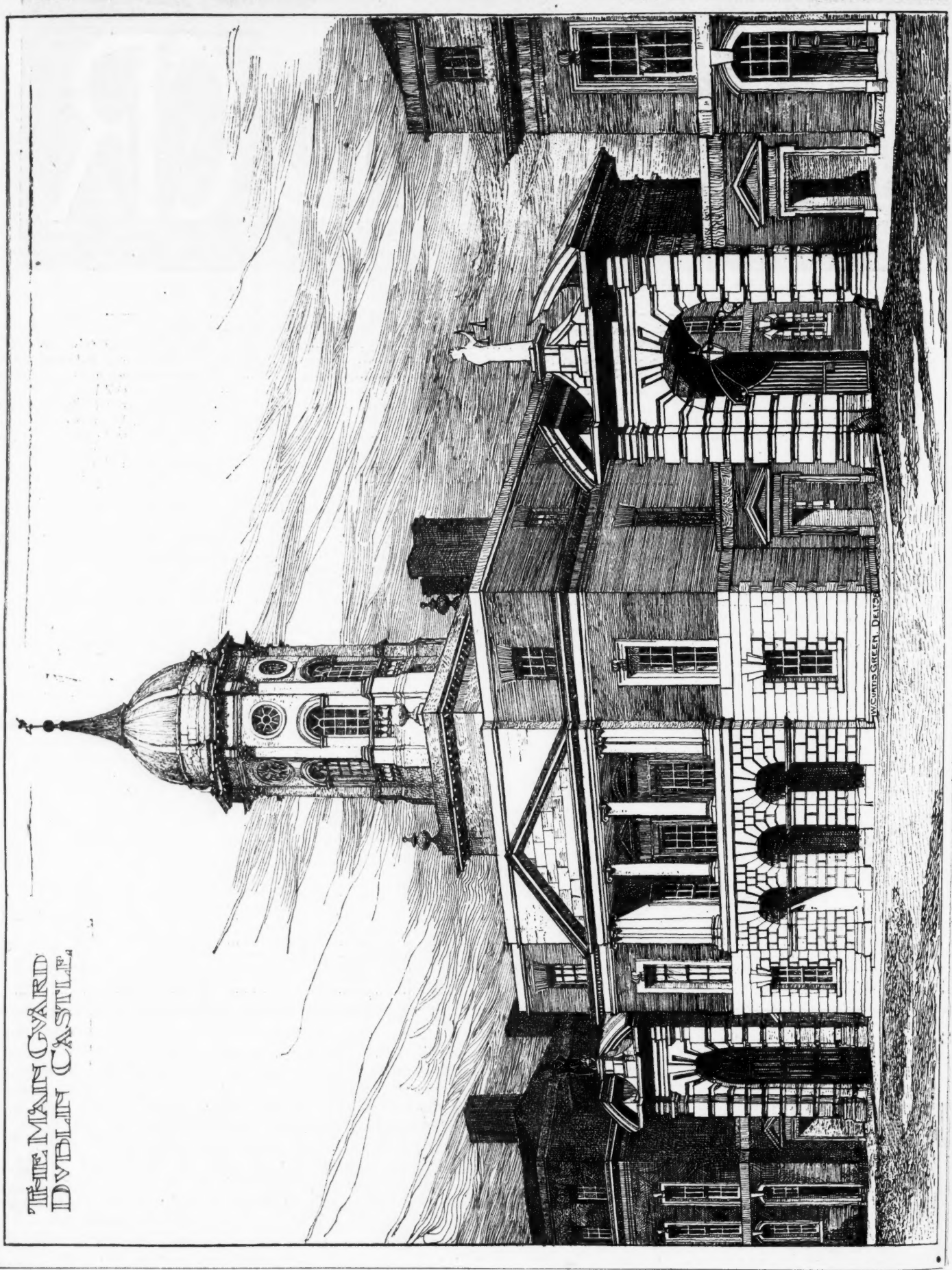
The Architecture of Our Large Provincial Towns.

XX.—DUBLIN.

THE history of Dublin in its early stages of gradual growth, in its half century of transient splendour and in its passing stage of decline, is all recorded, for architects at least, not so much in the dull pages of a chronicle as in the actualities of its streets and monuments.

The appearance of the river and the steep rise to the castle suggests the early settlement, while the antiquarian eye detects in the crypt of the neighbouring Christ Church Cathedral the actual lower part of the walls of the church built by the Danish settlers. To them is due the unique setting out of its east end, erected by the succeeding Anglo-Normans in an otherwise purely English manner. St. Patrick's, situated just without the walls, though equally English in character, stands as a record of the rivalries and divergencies of opinion of the new settlers. At a later epoch Dutch influences in old brick houses with gables, divided by hollow sweeping curves and crowned with low pediments, remind us of the conquest of William III. and of the last struggle of James II. French influences in interior work are to be traced to the Huguenots, expelled by the revocation of the Edict of Nantes, while Italian artificers, attracted by the dilettanti tastes of travellers amongst the nobility, have left evidences of their skill.

The great epoch of the latter half of the eighteenth century is marked on all sides not only by notable monuments, such as the old Houses of Parliament, the Four Courts and the Customs House, but also by the noble squares lined with great houses whose flat brick façades do not reveal, to the casual passer-by, the wealth and display of their internal magnificence. Even in 1776, however, to a shrewd observer like Arthur Young, a suspicion of the solidity of this period of prosperity suggests the exclamation, "Happy if I find throughout the country in diffused prosperity the rightful source of this splendour!" The decline that followed, with its climax in the Great Famine of 1846 and the shrinkage of the population of the island by nearly two millions, produced a practical absence of building enterprise in Dublin. In less than ten years' time, however, the establishment of the branch banks from the north of Ireland, and some revival in church building, brought about a change. The introduction of tramways caused a movement of the population out to the suburbs which is still in progress, and the gradual transformation of Ireland from a purely agricultural to a semi-industrial country will surely in time restore a sounder, if less magnificent, degree of prosperity to the capital. In the changes which the future will produce it will be well if the old monuments and houses do not pass



THE MAIN GUARD DUBLIN CASTLE.

from the safe, if distressing, stage of neglect into the more destructive phase of modernising improvement.

Dublin is a city which, despite the irregularity of its growth, has nevertheless retained a definiteness of plan, which renders it an easy city for the traveller to visit. Possessing an approximately circular shape, as defined by its circular road, it is bisected through its centre by the River Liffey, whose quay walls form main thoroughfares in addition to the waterway itself. Sackville-street, towards the centre of the northern half of the circle, and running at right angles to its quays, forms the best possible centre of the town, and the Nelson Column half-way down its length, at the intersection of an important cross street, is a suitable starting point of many of its tramways.

So much praise has been bestowed upon Sackville-street, mainly deserved by its splendid width of 120 ft., that the architect is likely to be disappointed, and not unnaturally so, because he will expect something more than mere laying out to justify the claims made on its behalf. In reality, it compares best with Portland-place; its superiority to that street in picturesqueness being due to the portico of the General Post Office (*see* lithograph), which advances over the footway on the left-hand side of the Nelson Column already mentioned, and which is balanced on the other side by the lofty mass of a large draper's shop, which, though not particularly interesting in itself, still by its height and mass serves to raise the general sky-line in an imposing fashion at this point. The Nelson Column (1808) is a heavy Greek Doric shaft (20 ft. diameter) standing on a high square pedestal, into which it appears to sink owing to the absence of any base, an

A ROOFLESS TEMPLE AT ALL-HALLOWS COLLEGE.

instance of correctness of style being preserved at the expense of common sense. In the upper and older portion of Sackville-street the plain brick fronts have been mostly altered on the ground floor for shops. These shop fronts, where not of the usual wood-cased pattern, are unfortunately of a heavy style not in relation with the upper and older portions. At the extreme top end, on the right hand side, is a new bank of rather vivid red terra cotta and brick work (Mr. W. Stirling, architect). At No. 42, on the right hand side coming down, an old ground story remains. At No. 50, lower down on the right hand side, is an old doorway leading into an ample vestibule.

No. 54 has a Greek Ionic lower story, near to which is an old house with strongly-marked tablets between the first-floor windows and wrought-iron balconies. Opposite is a branch post-office, where the new ground-floor shop front is framed into three wide openings by granite piers, with small engaged columns on pedestals, the filling in consisting of arcuated oak framing split up with sash bars. The attempt is an interesting one, and the untreated oak combines well with the unpolished grey granite. Mr. H. Pentland, one of the Surveyors to the Board of Works, is credited with these branch offices, which are again referred to later on. Near the Post Office the Standard Life Office has a large six-columned Greek Corinthian portico in granite, on a high basement formed by the ground story of the building. The portico has a pediment containing some figures, representing the wise and foolish virgins, by Mr. R. Steel, R.S.A., the architect being Mr. James Bryce, of Edinburgh. The General Post Office portico is rendered rather aimless by the entrance being now round the corner in the side street. The architect was F. Johnson (1815); the detail of the building is very heavy, the main cornice, passable over the order, is seen where continued upon the plain walls of the wings to be unusually clumsy. The Grecian ornament of the frieze has a metallic character by its sharp relief when seen in sunlight. The "Scottish Amicable," lower down, has a quiet arched shop front and entrance in unpolished grey granite.

At the lower end of the street is the O'Connell monument (*see* lithograph), good in general design, though the sculpture seems rather tame. Some rather weak-looking wrought iron railings surround the base, and the ugly standards of the overhead tramway cables flank the statue and confuse the lines of its sculpture. The O'Connell bridge, which carries the street across the river, is of a splendid width. The design is a very good one, and is that of James Gandon (1791), except only that it has been made level and widened. Looking up the river is the startling apparition of a bridge devoted to advertisements; down the river the dome of the Customs House rises proudly above its surroundings, but here again a lattice girder railway bridge cuts its lines, obliterating the upper half of its supporting order. Across the bridge is Westmoreland-street, running straight to the Bank. At the right-hand corner the Dublin Port and Tax Office has a curious ground story in a flat treatment in granite of small Ionic pilasters with panels over; the block at the other extremity of this side of the street has a similar treatment; these being traces of the original entresol, 7 ft. high over the shops, which the Commissioners who laid out this and the neighbouring street on uniform lines used to enforce long after the custom of living over the shop had died out. The opposite angle at this upper end of the street has the Gothic London and Lancashire Insurance Office, by Mr. O'Callaghan, in stone, with an angle turret and gabled dormers, having rather a French character throughout. The Scottish Widows' Office, by Sir Thomas Deane, at the lower corner of the street, on the left-hand side, is in red stone with polished red granite shafts to the windows, the style being of a mixed character, a round arched Italian influenced by Venetian ideas. There are heavy balconies balustraded as at Venice, and supported on profusely carved stone corbels to the second floor, where two round-arched windows have double granite shafts on the centre pier, the openings being enclosed above with semi-pediments formed by straight-lined labels. A console cornice above the next story combines with an architrave-like string below, to frame the upper windows into a deep frieze. Turning round with the sweep of the road on the left is the Provincial Bank of Ireland, by the late W. Murray; the ground story is in seven arched bays on a high plinth; above are two stories enclosed in a Corinthian order with a central pediment, enclosing some bold sculpture representing Commerce and Agriculture bringing tribute to the genius of Banking. Beyond, in the centre of the road, is a prickly monument to Sir P. Crampton, Bart., a former Surgeon-General, combined with a drinking-fountain, which is inscribed as follows:—

> "It but feebly represents
> The sparkle of his genial fancy,
> The clearness of his spotless honour,
> The flow of his boundless benevolence."

Erected 1862; the flow has, fortunately, been increased since that date, as for a long time it was but a humorous commentary upon the text.

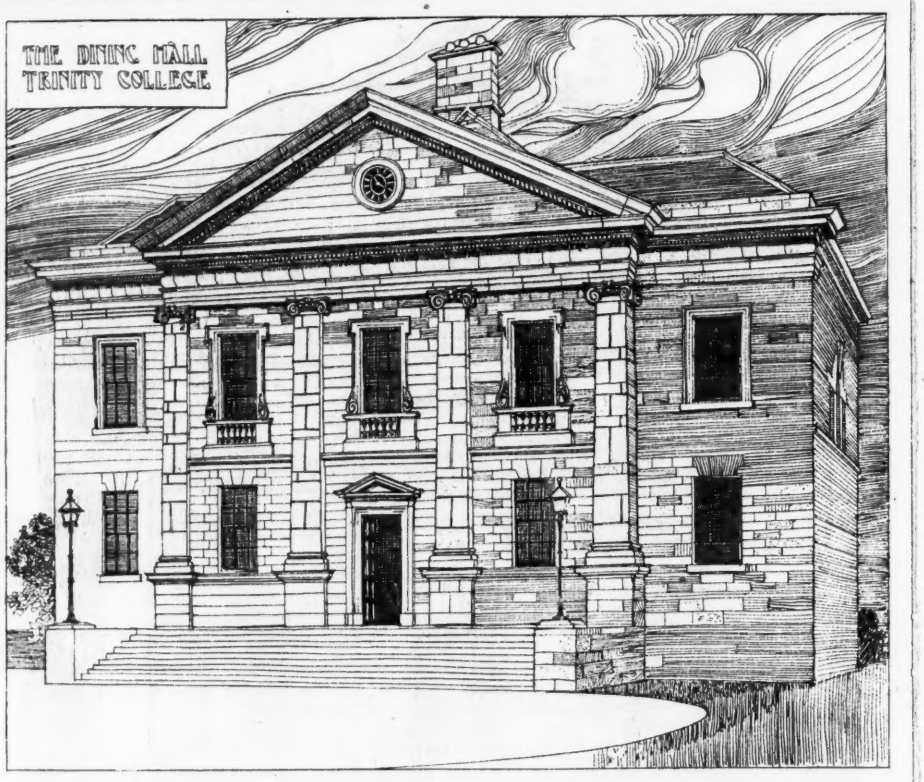
We have now reached the most striking classical buildings in Dublin—the old Houses of Parliament now the Bank of Ireland (*see* lithograph for general view and view in portico). It is worthy of notice that few of the eighteenth-century buildings in this city, despite the symmetrical ideas prevailing at that time, are axial in their setting out. This monument, in particular, is approached by such sweeping lines of streets, that only by selecting a special point can the beholder get the statues set up before its porticoes on true axial lines. The House of Lords portico, which is nearest to Westmoreland-street, is particularly out in this respect, while nowadays it has a further and more serious disadvantage in an apparent aimlessness, owing to the actual entrance having been obliterated. The main front faces to College Green at right angles to this portico, the junction consists of a bold sweeping curve, repeated also on the other side, and these curves are perhaps the most original and striking feature of the building. The order is Ionic of an adequate scale, it stands on a high socle or plinth below the base proper, and carries an entablature, marked by a pulvinated frieze and dentilled cornice, with a low parapet over. The main front is unusual owing to the deep recessing of the central four-columned portico, and it pleases, despite the serious way in which the pretensions of the main feature are challenged by the advanced wings, which consist of arched entrance ways framed by the Ionic order. Besides being nearer to the eye and thus seemingly taller, these wings are also rather wide in proportion to the main portico. The circular sweeps which so powerfully support the wings are treated with great skill, the lower part of the walls, forming the background of the order, being rusticated up to a string, above which are simply detailed niches in plain masonry. The portico in Westmoreland-street is Corinthian, which, in comparison with the contiguous Ionic order, looks short and the Ionic tall, although extra height has been obtained in placing the former direct on the pavement by omitting the high socle of the Ionic already described. The cornice runs through with its dentils, but architrave and frieze are different, a good break being obtained by a skilful background of plain masonry, devised to set off the richer Corinthian order. Perhaps fluting would have given the requisite appearance of height to these columns. Nothing, however, in these remarks is intended to lessen the great impression that this building distinctly conveys. It has not the refinement of detail, power, or originality of St. George's Hall at Liverpool, but it is all the same one of the best productions of the old Classic school.

In this account we have deliberately treated of the building as it stands and as what it would generally be considered to be, namely, a complete design uniformly carried out. A study of its history reveals the

reverse and unexpected fact, that the building is a happy growth and the work of four or five architects at succeeding periods. The original part is the recessed portico façade to College Green, built in 1728, under Captain E. L. Pearce, Surveyor-General in 1730, probably assisted by R. Cassel, a German of whom other work remains in Dublin. Another attribution is to Thomas Burgh, the previous Surveyor-General, who is credited with Trinity Library. At this period, houses abutted against the flanking wings, there were windows in the back walls of the porticoes, and a crushing dome over the House of Commons rose in the rear of the pediment. In 1785, the houses on the west side were removed, and Foster-place was created. A western façade was thus obtained with a bold quadrant open double colonnade connexion to the original front in College Green. This was the work of Robert Parkes. About 1790, the east side was similarly cleared, and James Gandon put up his Corinthian portico façade to the east, but with a quadrant connexion in the form of a blank wall only. In 1801-5, F. Johnston altered the building, as it now stands, for the new purpose of the Bank. He removed the Commons' Chamber and cupola, closing all the external windows and most of the doors. He also put a wall at the back of the outer range of the open quadrant portico on the west, and on the east he added similar columns to the corresponding quadrant wall which Gandon had left blank, thus cleverly establishing the present unity of the design.

It is a misfortune that the interior has been reconstructed for the use of the Bank, as the one chamber—that of the House of Lords—which is preserved, is of great interest. It has been singularly little touched; the splendid mahogany table, and even the simple, but good, mahogany chairs with inlay in the back rails, are the same. This fine apartment is best described as being on the lines of a Roman hall; it has a main semi-circular vault, treated in flat coffering, with lunette windows in the spandrels at either end. Below each of these is a recess, the far end one being a semi-circular exedra, where the Lord Chancellor sat on the woolsack, while the Commons entrance end, or space beyond the bar, is square in shape and covered with a segmental vault with octagonal coffering. It is worth noting that the semi-dome of the exedra is coffered in lozenges, as in the Temple of Venus and Rome at Rome, producing the fine spiral lines which have always been admired in that example. The fireplace on one of the long sides is original, even to its cast-iron work and its mantel of wood and marble combined, and is of a vigorous, rather German, character. The tapestry patterns are also interesting and original.

The House of Commons is now the main banking-room and has been reconstructed. At right angles to the Bank is the west front of Trinity College (*see* lithograph), by Sir W. Chambers, ending College Green and facing Dame-street, an important thoroughfare that leads into it. Here again the want of axis that seems characteristic of Dublin prevails, as the front of Trinity is not central to that street. This front is a good combination of granite and Portland stone. The whiter architectural features tell against the dull grey of the unpolished background; the tooled surface of the stone contrasts well with the roughness of the axed granite. A feature of this façade is the strongly marked narrow wings which have something of the force of towers without their aggressiveness. The centre is pedimented over four engaged three-quarter columns spaced with a double width for the centre bay, where the semi-arch of the entrance way springs from the caps of the pedestal, as occurs in some Spanish work. Over this archway is a prominent window lighting a large saloon over the vaulted carriageway below. On passing through the gateway a fine oblong court is visible, in the centre of which is a good modern campanile (*see* litho-



graph), built in 1852, designed by W. H. Lynn, afterwards partner in the firm of Lanyon & Lynn, of Belfast. It was intended to have had extending colonnades on each side and, in explanation of its design, it should be recalled that it occupies the position of the old monastery tower at the crossing; the laying out of the College having been dictated by the line of the old church of the Monastery of All Hallows, which was dissolved, the grant for the foundation of the College being made in 1591. The splendid library, occupying the upper right hand side of the court, was built in 1712-32, being ascribed to Thomas Burgh, Surveyor-General, as architect. The other sides were chiefly brick buildings, rough cast, of which only the block facing the library remains unaltered, and this is about to be removed to make room for a Graduates' Union by Mr. Thos. Drew. The end block has been recased in a foolish fashion with a red brick facing, destroying the general tone of silver and grey of the collegiate buildings. It is much to be hoped that no further modernisms of this kind will be introduced into Trinity College.

The College Green front, with the three sides of quadrangle behind that forms the lower half of this great court, was designed by Sir William Chambers in 1785; his sketch model of the façade is to be seen in the library. It appears that he never was in Ireland, and the general character of this work is rather bolder and more careless than those of his with which we are more familiar. Beyond the great court is an upper court of detached buildings, beyond which are some more recent blocks, the college grounds being very extensive. The Provost's house facing College Green is a study of General Wade's house in London, often ascribed to Lord Burlington.

The block by Sir W. Chambers, forming, as we have described, the lower half of the great square, has wings terminated by the chapel and the examination hall respectively, set with their pedimented ends facing each other. The interiors are alike in general lines while differing in details; each is oblong and ended by an apse with three windows, there being no other source of light except from an attic story of lunettes, comprised in the elliptical intersecting vaulting of the ceilings. This stage is worked round the apse, also producing intersected half-domes at that end. Below this low attic is a continuous frieze and cornice supported by flat panelled pilasters on a high podium. The entablature is not well fitted to the vault above; the decorative ornament is of a Wedgwood character. As there are no transverse arch bands in the vault of the hall, the shapes formed by the groins produce a curious effect looking down the soffite of the ceiling; in the chapel, however, such arch bands exist, while the order is also coupled instead of single. Both interiors have western galleries; the chapel, in addition, has a hemi-cycle of engaged columns in wood of a rather rich and bold character. The old pulpit with its characteristic stairs upstands in the centre passage. Just beyond the left-hand wing of the Chambers block, and rather set back, is the dining hall, standing free. It is said to have been built by the college mason and to have failed in some way, possibly in the roof inside, whereupon Sir W. Chambers appears to have been called in, this being his first introduction to Ireland. The façade is rather rough and coarse in detail, but it is interesting, because, like Clare College at Cambridge, it is Anglo-Palladian rather than classical. A point of interest is the bonding of the pilasters in small courses, whose pedestals have no bases, with apparent compensation, however, in extra heavy capping mouldings. Internally, a small hall leads to the dining-hall proper, a fine apartment superior in design and detail not only to the façade, but also to the small hall preceding it. It is a notable interior, possessed of greater harmony of style, and refinement of detail, than either the examination hall or the chapel can claim.

The library, however, occupying the upper right hand side of the great court, is the most famous and interesting building in the group. It has suffered a good deal from modern enlargements, to which are due the ugly mansard roof, and the destruction of the original vaulted ceiling of the ground floor cloisters, which have at a still more recent date been wholly appropriated as a book store, the arcades being glazed in. The entrance is at one end, where an ample staircase in oak, carried round a square hall, leads up to the library on the first floor; the ceiling of this hall is in plaster work of a rococo character, as also is the ornamentation of the large panels upon the wall above the first floor level, up to which point the work is in rustication. The hall is one of the not very numerous examples of an apparently French influence, and the date of completion—1732—may have some bearing upon the facts. The library is a noble room, lined with bookcases at

Commercial Union Assurance Company (Sir Thos. N. Deane & Son).

right angles to the windows, in which, as in general characteristics, it recalls Wren's Library at Cambridge. When the new roof was put on in 1860 an upper order of cases was introduced, surmounted by a barrel roof in wood, in place of the old flat plastered and panelled ceiling, shown in Malton's views. Unluckily, the original seats have been converted into dwarf bookcases; they have interesting ends with large C scrolls. The second court contains buildings of lesser interest, but in the left hand lower corner is an old portico by Cassel, a small square, four-column temple known as the Printing House. On the right hand side is a modern block, the Engineering Schools, the design of Benjamin Woodward, who, beginning as an engineer, took up architecture previous to his early death about 1861. The work was completed by Messrs. Deane, Son & Woodward, associated with the late John McCurdy, the College Surveyor. It is a Romanesque semi-Venetian palace, with a fine feature in its lofty moulded plinth extending up to the ground story window-sills. The interior contrasts with the somewhat clumsy character of the exterior. The feature is a remarkable staircase hall approached from a square vestibule at a lower level; this upper and oblong hall is of great height and domed in two bays, each with one eye as the sole source of light. At either end are arcades in two stories extending the area of the plan, and the central flight of stairs divides and rises in a bold arch on either side to the upper stage of these galleries. This hall is, of course, the centre well, or cortile as it would be in Italy, of the square block of buildings. The general conception is a powerful one, and it is carried out in a severe style of treatment depending in part for its effect upon large blank surfaces of plain ashlar. The colour treatment is not so successful and detracts from the result, more particularly in the pendentives and surfaces of the domes, where enamelled bricks of strong colours are used in the formation of patterns.

Returning to the open square in front of the Bank, known as College Green, and proceeding westwards towards Dame-street, at the angle of the street is the Commercial Union Assurance offices, a Gothic building with an angle turret and a gable on each face, designed by Sir Thos. Deane & Son, in yellow Mansfield stone. The turret grows out cleverly from a shaft at the ground story. The Ulster Bank, by Mr. Thos. Drew (*see* lithograph), on the left, attracts attention. It is a somewhat ambitious design, but is rather characteristic of the type which financial institutions in this city affect. The ground story is treated as a basement to an order on a large scale, usually, as here, carrying a pediment, and in this case three stories are comprised in its height; it being mounted on tall pedestals which reach up to the imposts of the first floor windows, treated with semi-circular arched heads. In the top stage the capitals of the order are cleverly detached by setting back the wall face, with the further advantage of increasing the depth of shadow in the right place just below the entablature. The entrance archway leads into a small but richly-treated porch or vestibule, closed to the street only by a wrought iron gate, and from this the fine banking-room is entered direct on the axis of a semi-circular exedra, which is repeated, beyond the coved and domed centre, by another at the other end. The treatment is rich but subdued; the mosaic pavement is of good design, in black and red with touches of yellow, in large circular wreaths on a white ground. The base of the wall is in red marble with the hard limestone of which the façade is built (but here polished) for skirting and capping. Above for about three-quarters of its total height the wall is in plain rusticated red stone ashlar, the remainder being intended for a deep frieze of colour decoration which would encircle the whole interior, and bring its parts into good relation. Above the red stone entablature, in the central portion, is a deep diapered plaster cove, hardly fine enough in its detail for the material, with arches and pendentives to a glass dome, which is the sole but adequate source of light. This description will convey an idea of what these banking halls, which are practically open to the public, are like; and as it is, on the whole, the best, it may serve as the type. Messrs. Atkinson & Co., the poplin weavers, have the shop adjacent to the Ulster Bank, also by Mr. Thos. Drew, and shown in the same illustration.

At the commencement of Dame-street is an old lead equestrian statue, by Grinling Gibbons. The statue is painted brown colour, like new bronze, and relieved with gilding. It has a worse and a better side; the former afforded great entertainment to Foley, who loved to expatiate on the points of the horse—*inter alia* the neck and head are on the down grade owing to the weight of the lead and the action of the sun.

Beyond the statue, on the left hand side, is the Hibernian bank by Mr. Drew, a heavy, round-arched building in grey granite with polished red shafts on first floor and purple slate roof. Next to the same, in red stone rather raw looking, is the Belfast Banking Company, Mr. W. H. Lynn, marked by a large circular turret with a steep, green slated roof (*see* lithograph). An added interest is given to this work by the fact, which would not probably be guessed, that the tower occupies a piece of property adjoining but only lately acquired, and is a clever invention to unite this strip with an older design. Mr. Lynn must be congratulated on the way in which he has thus extended his original building. The banking hall is an important room, but, as we have fully described that of the Ulster Bank, we need not dwell on this feature. Next to it is a quiet Ionic colonnaded shop front of three-qnarter columns in grey granite, also shown in the illustration.

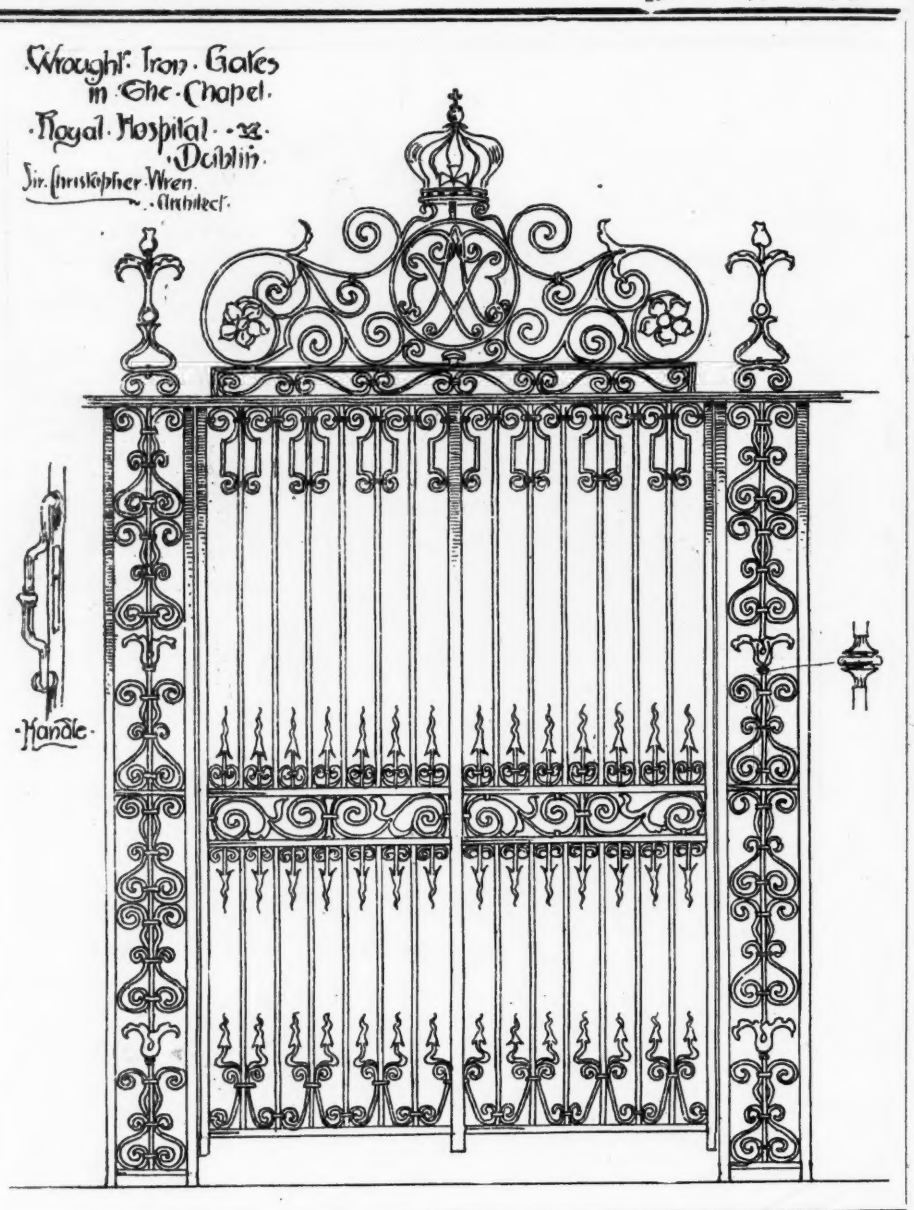
Opposite on the right hand side is an old pilastered front, now the National Assurance Company of Ireland, also of unpolished grey granite, but having unfortunately a new entrance with polished red granite panels. The Patriotic Insurance, on the right near Jury's Hotel, which latter has a new red stone pilastered ground story, is an old Greek stucco front of some interest, but as usual it has been altered on the ground floor. Higher up still is an Italian Florentine palace of granite, with an Ionic doorway leading to a wide vaulted vestibule; this is the Chamber of Commerce, by E. Parke (1796). At the end of the street, on the left, is the Munster and Leinster Bank, by Sir Thomas Deane, of a heavy, round, arched style in grey granite, with red granite shafts to the windows. The street then narrows and rises, being crowned on the left by the imposing Corinthian portico of the City Hall, by Thomas Cooley, 1775 (*see* lithograph), approached by a slight terrace staircase protected by balustrades, on a high basement adapted to the fall of the street. The portico

faces down a main street at right angles, but has the usual lack of centrality. The order is two stories high, the lower stage in the wings being windowless, and treated as a lofty rusticated wall surface with excellent effect. It is noteworthy that the dome of the Rotunda inside appears only in distant views. The style of the detail approaches that of Adam, having the characteristic flat swags between the capitals, and the fluted frieze without architrave to the minor Ionic order, between the Corinthian pillars of the main portico. This minor order extends into the interior and encircles the fine rotunda, of 52 ft. diameter, which is directly entered from the main approach. The peculiarity of this circular hall is, that while at the four main points the order is engaged, between it is free, as the enclosing walls for the height of the minor order are square in plan with canted angles. The rudiments of an aisle thus exist. The doors to the various offices are taken off at these points, and thus interfere less with the effect of the circle of columns, and are also straight, instead of curved in shape. This, however, is an alteration, as having been erected as an exchange the whole ground-floor was once open.

The Castle abuts upon the city hall; one approach to the former separates the municipal offices from the latter. These offices, once Lord Newcomen's house and bank, by Thomas Ivory, are a fine block in the same style, but are rather more delicate in design, something between Kent and Adam in character. The dual character of its original use has been well expressed in its façade.

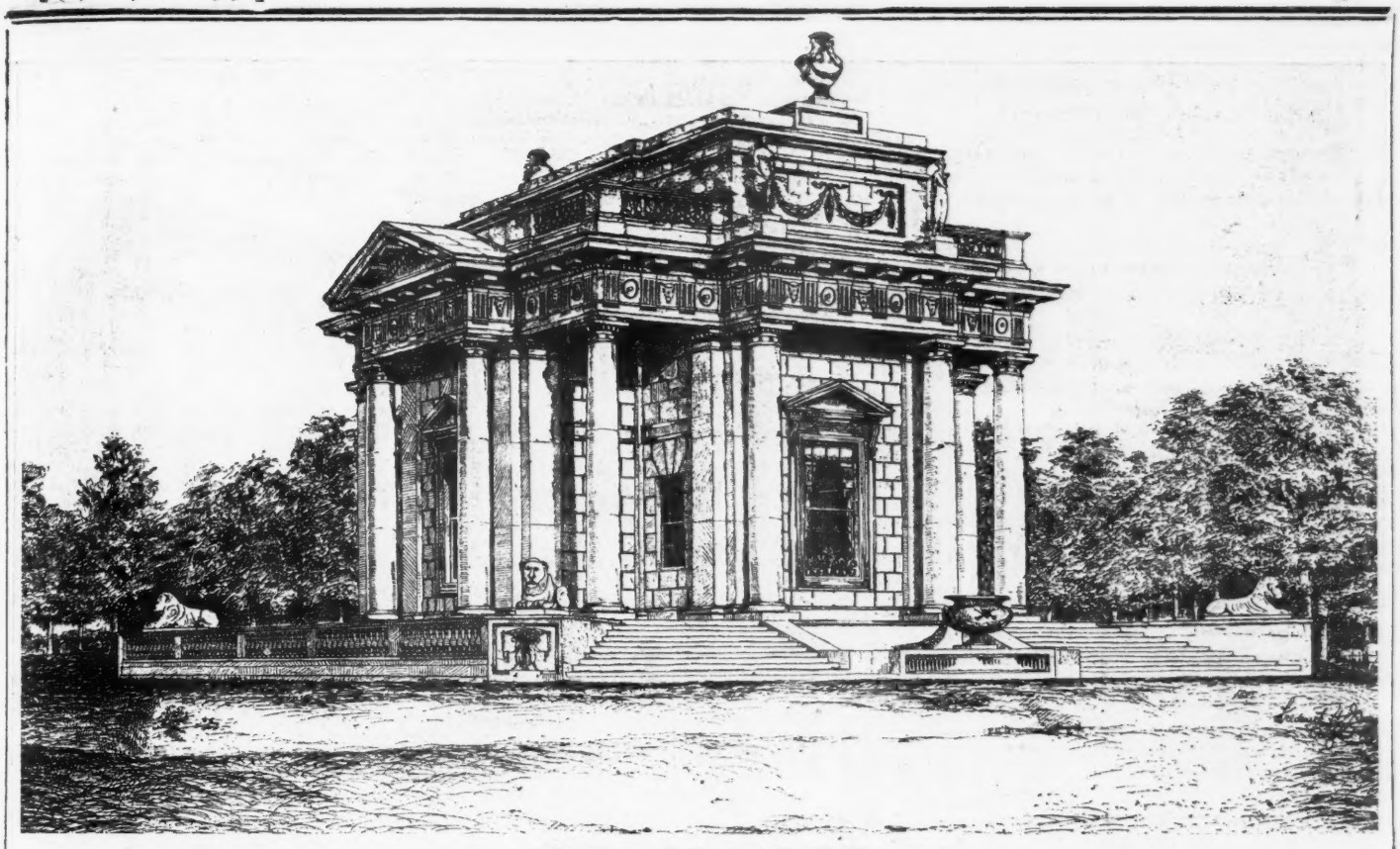
Entering the Castle at this point we find that it consists of an upper and lower court. In the lower is the only remaining visible round tower of the original castle (*see* lithograph); attached to it is a modern chapel of 1807-14 (by F. Johnston) of extraordinary Gothic, but a clever production for that date. Inside most of the interior is of wood, mainly oak, and the carving is of a vigorous description. In the eastern window are four panels of very rich stained glass brought from the Continent, probably from Flanders. Also preserved in the chapel is the heavy silver Communion plate, given by William III. to Christ Church Cathedral, which is also Dutch in character, and is of considerable interest. The upper court of the Castle is in a very heavy style, the two lower stories, of red brick and granite architraved windows, are damaged by an attic story in plain red brick. The court is oblong in shape; on the left is a projecting portico for the state entrance, and on the right a centre block with a recessed portico on the first floor, with an order of inadequate scale. Over is a tower, octagonal on a square base, with a Corinthian order carrying a leaded roof of reversed curvature over (*see* block on page 2). The state apartments are of very little architectural interest. The best room is an oval vestibule with four segmental domed recesses, and lit by an oval top light. It was decorated by Wedgwood, and has his characteristic low relief ornament on its plain walls. St. Patrick's Hall, in white and gold, is a good room for a dance, and there is a long domed corridor, rather heavy and very plain. The other rooms are in that European palace style which, wherever met with, seems always to be either dull or tawdry.

Castle-street leads on, up the hill, to the east end of Christ Church Cathedral. It is a convenient modern cut but a failure as a city improvement, having large unbuilt spaces, owing to an inadequate purchase of land, resulting in all frontage and no depth in the plots on both sides. Christ Church Cathedral (*see* lithograph) is a subject in itself, which we are here excused from treating of by the special account already given in the "Cathedral Series." The Synod hall and offices form a picturesque secondary block, grouped round an old tower restored by the late G. E. Street, as part of the new block. The interior of the hall and offices lacks the interest of the New Law Courts, and will



seem very bare to a modern student. Proceeding westwards from Christ Church down High-street, it is worth while for a moment to step aside up Back-lane, where on the left-hand side a quaint old archway, with broken steeply segmental pediment, gives access to the Old Tailors' Hall. This is a simple brick building, having on one side of its plain rusticated and pedimented door the four tall semi-headed windows of the hall itself, and on the other side the living portion, of two windows in width and height, the upper tier extending over the door. On the key block of the door is the date 1770. The windows are all wood frames nearly flush, and divided up by sash bars. Returning to High-street, and passing on to Thomas-street, the Augustinian Roman Catholic Church (G. C. Ashlin, architect) on the right forces itself upon your attention. The whole west front is gathered up as a tower, oblong in the upper part and finished with a steep stone roof, with dormer lights in tiers. The west window of the church is deeply recessed under a pointed arch, with the porch below, emphasising the tower idea; the pinnacles are bad, and the tenuity of supports gives a sense of weakness and of exaggerated altitude. On the right-hand side, beyond the church, Messrs. Power & Sons' distillery has a new doorway on a rounded angle in granite; the distorted forms of the Late Renaissance are well worked, despite the stubbornness of the material; Mr. W. D. Caröe is the architect. On the same side the St. James Branch Post Office is a new building, and a departure from the ordinary type. Above a high plinth in brick, a three-fold division by granite piers, forms wide openings, which are subdivided by wood framing; the piers carry granite architraves surmounted by a brick gable of modern fashion. The doorway, formed in an end division, extends into the wood framing, with a somewhat heavy stone canopy, this being the feature most open to question. A variation of this design will be seen in the Phisborough Office on the Circular-road. Mr. H. Pentland is the architect.

The street now divides at a fluted and banded obelisk, with sun-dials on each face. The upper branch is lined by several old houses of simple type, the chief feature being in the doorways, with their ingenious variations in the numbers and forms of the pannelling. A side turning runs down to Bow Bridge over a side steam, and a path ascending on the other side leads up to the Royal Military Hospital (1680-4), well placed on rising ground, the design of which is, with much plausibility, ascribed to Wren (*see* lithograph). The façade is long and low, and, approached on this side by a steep incline, is seen well placed on a plateau, with fine grass plots spread out in front. The body of the building is of brick, rough cast; the dressings stuccoed or painted are wide and flat, so that they give an idea of too close spacing of the windows. The centre has stone moulded architraves, and a central gateway treated with a window over as a special feature, while above is a wide spreading pediment. The steep roofs are, unhappily, in purple slates, doubtless modern. The extreme right hand presents the curiosity of the façade, as the chapel window is emphasised by the whole entablature being bent round it, forming a semi-headed pediment, which is carried back in lead into the main roof. This large semicircular-headed opening has been subdivided by doubtful tracery. Entering the centre gateway you pass through into a quadrangle 210 ft. square, whose lower story is an arcade in semicircular arches of



"The Marino," Clontarf (Sir W. Chambers).

stone on plain piers, the upper story being rough-casted as before. On the right, the arcade is broken by the hall of five bays, the centre having an arched and pilastered doorway with a balcony over, approached from a segmental pedimented window on the first floor. The hall is entered from the quadrangle or from the base of the tower. Inside it is a splendid apartment, 100 ft. by 45 ft., with a curious coved plaster ceiling, exhibiting the tie-beams and uprights of the roof, which was unusual at this date. There is a large fireplace at the upper end with oak settles. At the other end the chapel is entered, as it is, in fact, a continuation of the hall block. It has a barrel plaster ceiling richly ornamented with plaster work, flowers and fruit, said to have been executed by two Italians. The other front with the tower gives on to a terrace with trees upon it; here a wrought iron gate leads by a stone balustraded double staircase to a garden below, laid out with formal grass-plots, ended by a garden house. Looking back at the hospital from here, the trees on the terrace give force to the white mass of the pedimented centre, above which rises the slender grey stone tower. If the building is not by Wren, even if he did not (as might be suggested) supply a general plan for local carrying out, we can at least say that it is not one of which he would have any cause to be ashamed.

Near at hand, off Bow-lane, is Steeven's Hospital, of 1720, but this has been so treated as to have lost most of the original interest of this rather rough and bald piece of work. Quite close is Swift's Hospital (1745) for the Insane, chiefly interesting from its association with the great Dean. Steeven's-lane leads to the terminus of the Great Southern and Western Railway, called King's Bridge Station, built in 1845 by the late Sancton Wood (*see* lithograph). The station takes its name from the bridge across the river; on the opposite or northern bank, and a little eastwards is the Blue Coat Hospital lying well up upon the slope. Built in 1773 by T. Ivory (*see* lithograph), this is a much more interesting building than Swift's or Steeven's. There is a good space in front of the façade, which consists of a centre and two advanced blocks, connected by quadrant screen walls treated with niches. The chapel is on the right, the left-hand block being the hall. Each of these is pedimented and has a tall turret of wood upon the roof. The centre has a rusticated basement supporting an Ionic order of coupled columns flanking an arched recess which frames a window. Over the main pediment is the start of an ambitious octagonal tower on a scale too large for the building, if we may judge from the old engravings that exist (from one of which our illustration is taken). This remains in a ruined state, the work of carrying out the original design having been abandoned. The illustration, taken from an engraving, shows the design complete.

From this point the tramway down the quay will bring us to Richmond Bridge, crossing which, Wine Tavern-street affords a picturesque view of the other side of Christchurch Cathedral, especially where it passes under the bold flying bridge which connects the Synod Hall with the West End of the church. St. Nicolas-street, which leads away due south from this point, is lined with tumbled-down property in a condition suggestive of a recent fire or siege. The ground stories are mostly wooden fronts, and are some of them suggestive of how shops might be treated with oak or teak pillars, in place of unreliable stanchions. Looking down the street, St. Patrick's tower and spire look very picturesque as we come down upon the west end in sharp perspective. The left-hand side of the street is lined with quaint wooden shops that have encroached upon the highway, and are one and all provided with irregular pent house shelters over the counters. All these appear to be on the point of being cleared away as, on reaching the Cathedral, the rear of this line of houses is seen to border on a great area of property behind that has been cleared. Doubtless this will be a civic improvement, of value for health and morals, but it is one not so likely to be appreciated by the artist and lover of the picturesque.

The west end of the Cathedral is very curious to an English eye, but decidedly impressive; a semi-fortress air is produced by the quaint battlements to the flanking turrets of the west end, and to the tower parapets. It is the happiest part of a blundering and drastic restoration which has effaced the old work, inside as well as out. The Lady Chapel, carefully restored by Carpenter, recalls the nave of the Temple Church and is very graceful. The whole building has, however, been already treated of in the Cathedral series, and need not be here enlarged upon. We give, however, for comparison, lithograph illustrations showing the general appearance of the cathedral before and since the restoration.

A short turn up Lower Coombe-street to the west, and on the right hand side, is the ancient Weavers' Hall (1750), an old brick front of two stories, with sash windows divided up by heavy sash bars and spanned by flat gauged brick arches. Inside, a hall leads to a staircase in wood, heavily balustraded, of two flights and a half landing, by which the fine room on the first floor front is approached. The whole interior is given up to the storage of sanitary ware, but the deep cove of the ceiling can be seen, and the columned entrance doors and end features all in wood can be made out. The fireplaces here and on the floor below appear to have been preserved. The rescue of this building is of urgent importance, and no restoration other than repair and cleaning would appear to be necessary, in order to preserve this good specimen of an old Guild Hall. This district was the settlement of the Huguenot refugees and is known as Spitalfields. Sweeney's-alley, somewhat difficult to find, presents a fine example (1721) of the old gabled houses that illustrate the Dutch influence, of which so many traces have been gradually effaced in Dublin. Many of the gabled houses have been flat parapetted, as has happened to the Weavers' Hall itself, which doubtless had a pediment of some kind, as the change in the character of the brickwork in the upper part declares.

Returning and proceeding eastwards, at the corner of Peter-street and Bridge-street is a fine old brick house of the Wren type, in five bays, three being slightly advanced as a pedimented centre. The roof has, unfortunately, been reslated and provided with ugly dormers. Over the doorway is a coat of arms and tablet setting forth that Sir Thomas Molyneux built this house 1711; it is approached by a good flight of steps and is a well-panelled example.

Proceeding northwards and turning off on the right, William-street brings us to Powers-court House (1744: Robert Mack, architect), perhaps the most imposing of the old private houses in the city. Its effect is gained to a large extent by the tall attic, marked out by console brackets on a large scale, which crowns the centre. The

College of Surgeons (the late W. Murray). *(From a photograph by W. Lawrence.)*

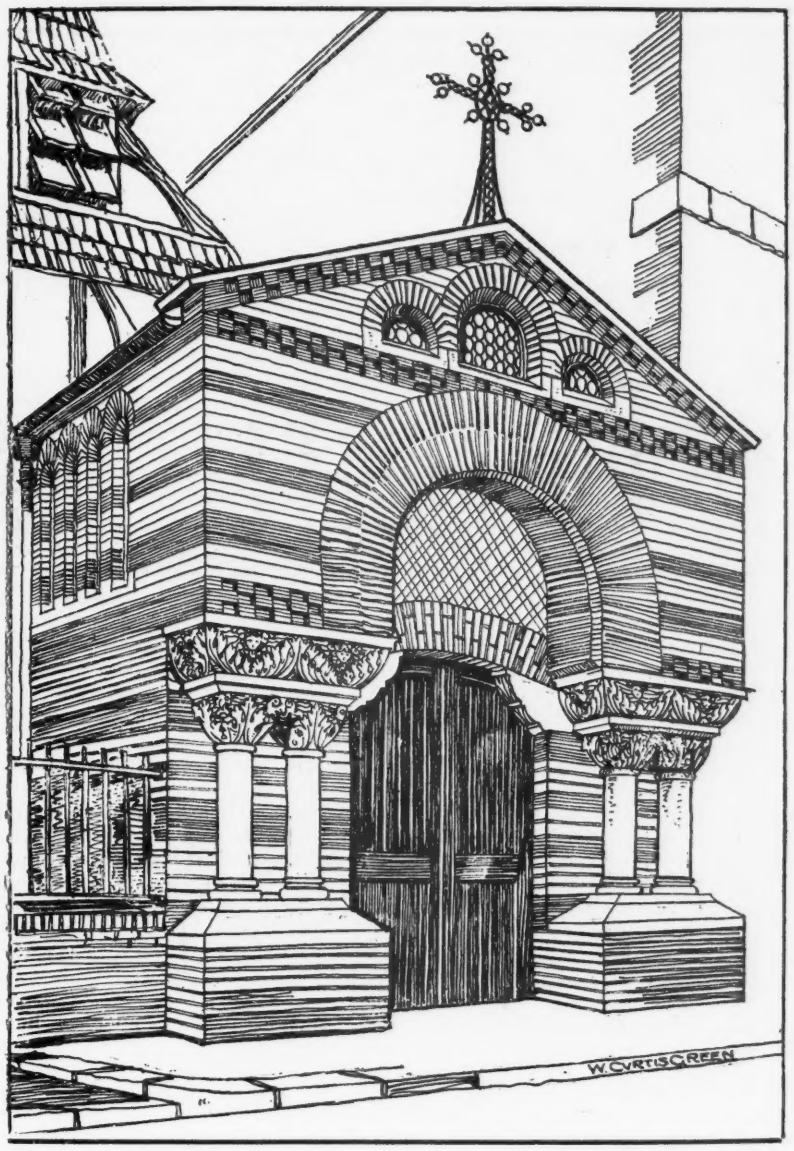
façade is of granite, with returns and back in brickwork. The centre doorway is somewhat small in scale, but a grand approach is gained by the sweeping lines of the balustrade enclosing a wide flight of steps up to the entrance. The area is enclosed by projecting arched carriage-ways connected to the main body with quadrant sweeps. This fine old house is now a wholesale drapers, but in 1811 it was used by the Government as a stamp office, at which time it was extensively added to in the rear, the back court being formed into a quadrangle by additional wings of no interest. The dining-room is a fine apartment, with a good plaster-work ceiling and with medallions of the same on the walls. The front hall is spacious and has a highly enriched archway opening on to the first flight of the staircase, which is of bog oak with heavy carved balusters. It surpasses in detail and richness the type of staircase hall which was followed in Dublin at the period.

Turning to the left we reach the South City Market, a large, well-arranged block (by Messrs. Lockwood & Mawson) divided internally into shops, with glass and iron roofs over the main avenues, and having besides a clearstory of brick arched openings over the shop fronts. The exterior elevations are in red brick and terra-cotta, and of a style of pointed arched Revival Gothic, with which we are rather familiar at home. St. Andrew's Church (W. H. Lynn, 1860) is in a past phase of the Gothic Revival, built of polygonal granite rubble with dressings. It has a good feature in the flanking open arched aisle, serving as a portico protecting the entrances.

Grafton-street, the Bond-street of Dublin, runs from College Green to St. Stephen's Green. Though it is the shopping centre, it cannot be described as an interesting street architecturally. The shortness of the leases is one reason assigned for the want of building enterprise that it exhibits. No. 68 presents an old wood shop front design, with a curious bow window in the centre; this was a type once common in the city. Nos. 64 and 65 have been rebuilt in red brick and terra-cotta, with four stories over the shops. The block presents two gables on the face and one on the return; the treatment is too much split up by vertical and horizontal features (J. F. Fuller, architect). St. Stephen's Green (1670) is a fine old square of exceptional size, the central garden (1,220 ft. by 770 ft.) being laid out in an ornamental manner after the style of St. James's Park, but with a rockwork cascade, bridges, and serpentine paths, introduced in modern fashion. This work was due to the munificence of Lord Ardilaun, whose seated statue in bronze on the western side is a graceful work by Thomas Farren. On this west side of the square is the Royal College of Surgeons, built by E. Parke in 1806, and rebuilt in 1825 by William Murray, senior, having a Doric order in Portland stone relieved against walls of grey granite. The ground story is a rusticated basement, while the first floor in seven bays presents a portico of three bays embraced by a pediment. The order is of three-quarter columns, which are coupled at the angles, but to the centre the order stands free in order to produce a sufficient break to mark off the pediment. The windows of the first floor are semicircular headed with enclosing arches over, so that, in reality, it is an arcade in Roman Doric style, but owing to difference of colour of the white columns and the grey wall, this is not apparent at first sight. The square is lined with old brick plain fronted houses, such as we have already commented upon, with their chief variety and interest centred in the doorways. The wrought-iron railings also remain to the wide areas, but the old lampholders and torch-extinguishers in wrought-iron have mostly disappeared. There is one, however, at No. 96. The lodge to the Green strikes quite a different note, being a cottage in red brick, with wood-carved bargeboards, red tile roof, and prominent chimney with projecting brick courses (Mr. J. F. Fuller, architect.)

On the south side a porch in red and black brick work, with blue brick patterns, the pointed arch carried on coupled white marble colonnettes, with Byzantine carved caps and the typical abacus above, calls attention to the Roman Catholic University Chapel (1858: by T. H. Pollen). Entering the porch and passing under the deep western gallery, formed by slender columns with carved capitals into a description of narthex, we find ourselves in a lofty oblong interior—100 by 36 by 40—with a flat, beamed ceiling and large, half-domed apse, in early basilica style. The windows are narrow and round arched, and close under the ceiling, attention being concentrated solely upon the decoration. This consists of a high dado of coloured marbles, inlaid with lunette insertions in mosaic and painting, above which is a deep band of painted subjects, each divided off by single figures in upright panels. The windows are glazed with clear glass, leaded in circles, Venetian-wise, and a general effect of richness is produced by the quietness of the colouring, so largely composed of marbles. Adjacent to the porch of this chapel is an old classical house, remarkable for a crouching lion over the Roman Doric doorway (possibly designed by R. Cassel); this was once a splendid residence. Beyond us is the town house of Lord Iveagh, an old house with a new stone façade designed on old lines. A ball-room in alabaster has also been added by Mr. William Young.

On the east side of the square the College of Science (a house built by Lord Chancellor Saurin) shows an old brick front; and next to it is a house (No. 52) built about 1790, and once occupied by Bishop Clougher (1822-34). The typical staircase hall is here reduced to an oblong, but still retains its



Church Porch, St. Stephen's Green (Mr. T. H. Pollen).

ample flights and open well between, while it also differs in being solely lit from the end by a very large arched window with Venetian sashes starting at the half landing. The plaster-work ornamentation has been modelled by the fingers, and not with tools, as in the narrow water-wave band at the first floor level. The rooms here are interesting from their association with Angelica Kauffmann and Cipriani, who decorated them. In the ball-room are door-panels executed by the former, with small decorative figures and arabesques, on an apple-green ground; while the music-room has large chiaroscuro compositions in the panelling by Cipriani, which, with the other ornaments, all relate to musical subjects.

Leaving the square at the north-east corner, for a brief digression southwards, in Earlsfort-terrace we pass the long façade of the Royal University, once a winter garden, but now a very inadequate design for such an institution. The Alexandra College opposite, built in 1888 by W. K. Parry, is of very red brick with a green slate roof and boasts a heavy projecting wood bay in the centre of the front. The return front, partly visible, in rubble and brick dressings, supplies a hint that does not appear to be followed at all in Dublin; although the red facing bricks as commonly used have a semi-glazed surface, and virulent colour, that makes a whole façade of such a material somewhat trying in such a grey and white city. At the end of this terrace are some patent concrete salmon-tinted blocks of building which will not, we hope, be imitated. We now reach Harcourt-street Station, the terminus of the Wicklow Railway (1858: G. Wilkinson). It is of good design for a station, and one which on a large scale would be imposing. A bold entrance is obtained by a large arch springing off the entablature of the colonnade that forms a portico along the front. Returning to St. Stephen's Green and turning off on the east side, Hume-street leads to Ely-place, in which is Ely House, a very fine specimen of an old city mansion. An ample vestibule leads to a square staircase hall. The stairs work round the walls in the customary manner, but are novel in their dedication to the "Labours of Hercules," who, carved in stone, stands as the newel at the commencement. The balustrade panels exhibit the "Labours" in the form of the characterising animals, which appear to be in wood, though they have the flat rounded treatment applicable to cast metal. On the many-panelled doors, which are of splendid mahogany, are pierced and chased mountings in silver. The rooms are decorated in low relief plaster work in a Wedgwood-Adam style. The mantelpieces of white and Siena marbles with carved panels are excellent examples, such as used to be common in Dublin; the grates are heavily mounted in silver.

Kildare-street, off the north side of St. Stephen's Green, presents, on the left-hand side, the well-known National Museum and Library buildings, by Sir Thomas Deane & Son, which were the outcome of a competition. Old Leinster House (*see* lithograph), now the home of the Royal Society of Dublin, forms a centre, the new buildings, right and left, being the Science and Art Museum and the Library respectively (*see* lithograph). Although alike in the façades that face each other, they are different in internal plan and design; also, on the Kildare-street front the Museum block is much longer, and rather different in treatment to that of the Library. The Museum block, on the right hand, has as its entrance-hall a rotunda, encircled by a gallery at the first-floor level, carried on rich Irish marbles of varied colours; the treatment throughout departs from the classic tradition, being carried out in an elaborated Early Renaissance style of detail, introducing rich carving and also colour, as in the pavements of mosaic and in the doorways of modern Della-Robbia ware. The cupola of this front hall has a central eye and skylight over, the surface of the dome being panelled in plaster with coffers of small size, below which is the peristyle which, leaning in, after the manner of that at St. Paul's, is treated with pilasters in narrow bays enclosing tall arched openings, which are alternately windows and recesses to the front, and all recesses at the back. From the rotunda the large court is entered, covered with a glass and iron roof which is not a very successful instance of the use of ironwork, the architectural treatment being traditional rather than of a character adapted to the material. The student will find the contents of the Museum of great interest, more especially the Irish antiquities, upon which, however, we cannot enlarge in this place.

A richly-treated staircase ascends to the upper floor and gallery of the court, giving access to the rooms surrounding, in many of which the roofs are of an ornamented queen-post type, the majority of the rooms having top light. Special attention must be called to the architectural drawings in water-colour of the Custom House and Four Courts, by Gandon, and also those of the Houses of Parliament, and to a bird's eye perspective by A. W. Pugin, of Maynooth College as proposed. The library block opposite is quite different in internal arrangement; the entrance-hall is low with a flat ceiling, but the effect is carried off by an inner ring of columns concentric with the outer sweep of the walls. The staircase is approached direct through a small square hall in stone, panelled and pilastered. From the top landing doors right and left lead into the great reading room, which has a half dome prolonged upon straight side walls to a gable end; the eye, which is the main source of light, following the same line. An inconvenience attending this solution of the problem is that the iron trusses, of which apparently the domical ceiling is constructed, are seen passing through this skylight. The inside treatment of the dome is like that of the Museum rotunda in the upper part, the windows being alternated with recesses.

Leinster House, in the centre, is a dignified if rather dull façade (1745), by R. Cassel. Inside is a fine hall, with a two-storied arcade in three bays opposite the entrance, carrying through the passage at the first floor level; the deep coving of the ceiling has the effect of a square dome, but the intersections for light are awkward. A certain German heaviness of detail prevails throughout this hall. From the central bay of the arcade opposite the entrance runs a good corridor to a more graceful ball-room in the rear. The back façade of Leinster House is flanked by two gallery blocks enclosing a spacious open garden. These were erected under the direction of the late Captain Fowke, R.E., assisted by C. Lanyon (1859), with simple façades in the style of the old house. The right-hand block is the National Gallery of Ireland, and one-half of its length forms a sculpture gallery, well lit by side windows, flanked by advanced columns supporting a beamed ceiling. The end of this saloon forms a sweep pierced by a central archway, on either side of which a flight of the stairs commences, turning inwards with long, winding steps. The staircase, which does not develop well in its architectural treatment, ends in the picture gallery, which is a large room with a cove to the glass lights, as at South Kensington. The opposite wing is connected to the New Science and Art Museum on the front in Kildare-street, and contains the

natural history collection. The ground floor room is uninteresting and ugly, with cast-iron columns, but on the first floor the whole wing is open up to the roof, and is treated as a store museum of a modern type, resembling somewhat the well-known example in Jermyn-street.

Merrion-square (1762), on this side of the National Buildings, is another fine old city square. Proceeding northwards in a straight line, Westland-row passes St. Andrew's Roman Catholic Church on the right, designed in 1793 by G. F. Johnston in regulation Greek Doric, except that on either side of the portico *in antis* is a blank arch. Inside we have the same type of a wide span transeptal church with segmental vaults and a dome at the crossing, all flatter than ever in this example. Almost next to St. Andrew's is Westland-row Station, which is a frankly modern and somewhat characteristic. The street front is end on to the railway which runs in by a girder bridge across the street, thus forming a wide centre in a front of five bays, the divisions being piers running up the whole height of the façade. Above the cornice is a balustrade, behind which a segment of the iron shed roof is seen. Carried out with good detail and materials this would be a nineteenth-century station façade of some interest. Proceeding northwards and turning to the left down Great Townsend-street, from Tara-street by a turning off on the right, we reach the Westmoreland Lock Hospital, built in 1792. It has a two-story classical façade in rather roughly-worked granite.

In Townsend-street is the four-story Protestant Church Mission building, in red brick, and in a semi-Gothic style. D'Olier street leads to the foot of the O'Connell Bridge and to the Nelson Pillar, from which this tour round the southern part of the city set out.

Commencing a tour through the northern half of the city, it will be convenient to set out on the eastern side of the Nelson Column, from which point, starting down East-street and turning up Marlborough-street on the left, the Roman Catholic Pro-Cathedral will be reached on the left-hand side, a Greek-Doric edifice with a six-column portico of correct pattern (1816: Morrison & Taylor), but with a saving clause of three lofty statues at each angle of the pediment as representative of Christian ideas. The interior, however, produces rather a striking effect from the simplicity of the lighting, with a further shock to the historical architectural mind, from the combination of a great semicircular barrel vault, intersected by a dome and finished with an apse, with an internal order of correct Greek Doric type which supports it. The architectural impression is that the Greek Doric order requires modification before being put to such use as this, and in particular that such a feature as a dome on large arches requires special supporting piers in order to be æsthetically satisfactory. Further on in this street is the unfinished façade of St. Thomas' Church (1758-62: J. Smith), after a design by Palladio. It faces down a fine wide street (Upper Gloucester-street) of old brick-fronted houses, quite plain, but varied with many forms of the Dublin type of the doorway of the period. By a turning on the right, the Amiens-street Station (by the late W. D. Butler—added to by J. Lanyon) can be reached, which has a granite façade of classical characteristics modified by freer Italian ideas.

Amiens-street leads southwards down to the back front of the Customs House (*see* lithograph), the masterpiece of James Gandon, and the building which with the Bank challenges the position of the grandest of the classical buildings in the city. The strength of the Customs House lies in its sky-line. Viewed from along the quays in sharp perspective, the long river front is singularly happy in its grouping; and in this respect the only competitor is the Four Courts higher up, whose simpler central feature tells by virtue of a greater mass and distinctness of outline. The back front of the Customs

is long and low with a central attic too extended to be quite satisfactory. The wings have an order two stories high, recessed in the main wall, which is a late and doubtful feature in classic. The order is Roman Doric, and the bold mutule cornice that runs through the whole front is the strong feature of this elevation. centralised with its surroundings, and the viaduct lattice bridge of the railway on the right is also a disturbing element in its effect. The materials are granite for the walling, with Portland stone for the columns. The centre feature, a four-column portico with pediment over, forms in the ground story a beautiful loggia, cross-vaulted in stone in three bays, about 8 ft. wide, the details being in the spirit of the vestibule at Somerset House. From this a pretty columned hall is entered, leading to an excellent stone staircase, with columned loggias at the first floor level, and lit by an oval eye in the dome above.

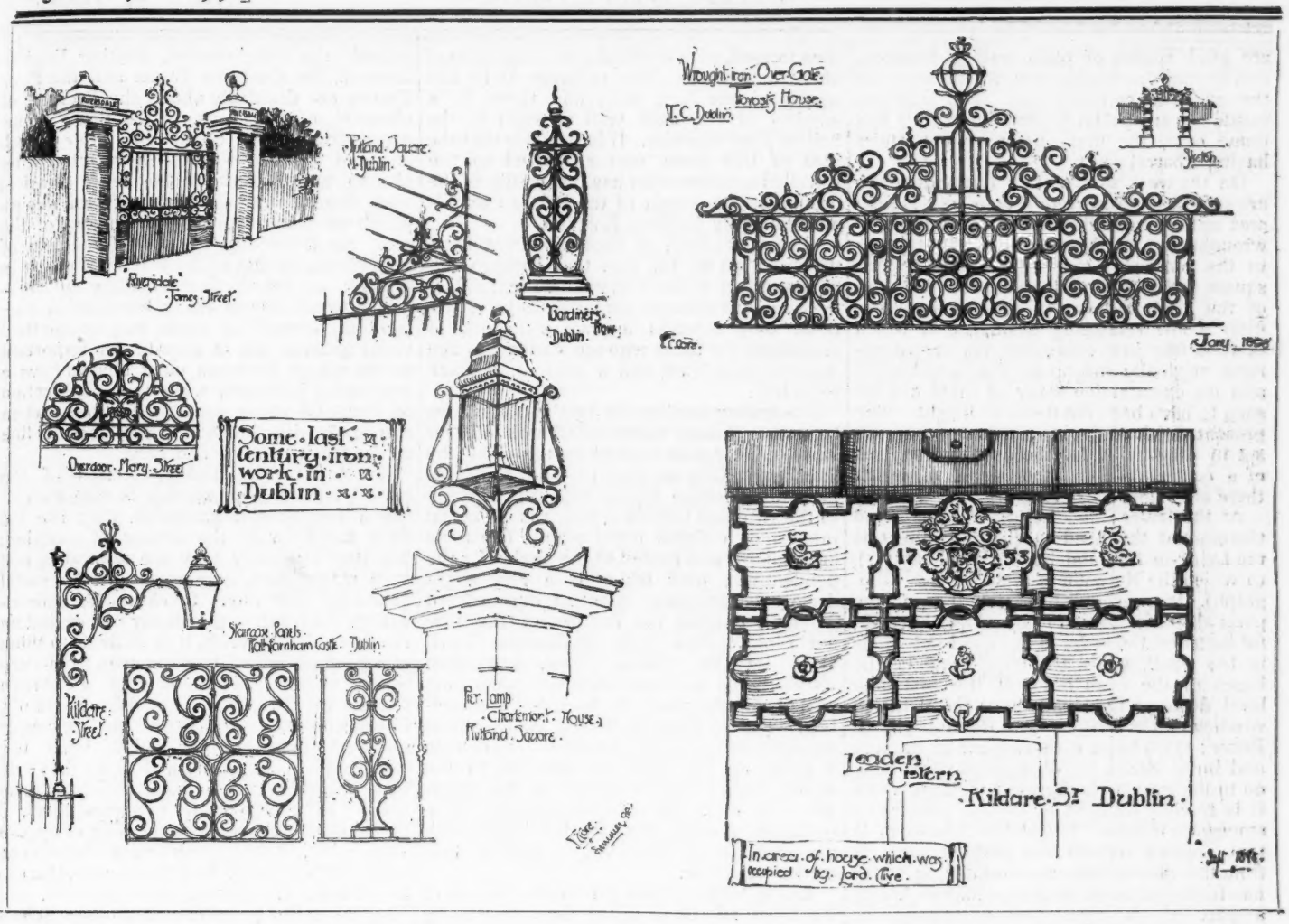
The front to the quays is more varied and pleasing. The dome externally is covered with copper, now a fine green in colour. The peristyle is strongly broken by four advanced masses treated with coupled columns, but carrying nothing upon their entablatures above to break the outline, or carry back the eye to the upper drum of the dome.* Inside, under the dome, the plan is octagonal, and this vestibule is the least pleasing part of the design. It is small and well-like; as the landings of the first and second floors go through with centre eyes, the view upwards is restricted. At the first floor level the treatment is with recessed orders, all in stone work with delicate carved ornamentation. The stairs are at the ends, and are also in masonry, as well as the connecting corridor parallel to the front, wherein some interesting vaults and flat domes are to be seen employed in the roofing. The detail is of the school of Chambers, and it may be said that the sculpture, by Smith, in parts approximate to the excellence of that at Somerset House, as in such features as keystones, &c., while in places it is more vigorous and skilful, but the gigantic oval vases upon the return fronts, that give vent to four flues apiece, by means of very obvious flue pots, are decidedly a blemish.

After visiting the Customs House the student could not do better than proceed along the quay to the Four Courts (*see* lithograph), which presents instructive points of contrast and similitude. The name explains the plan; the four courts of Queen's Bench, Chancery, Exchequer, and Common Pleas were to be housed in the same building. The great domed rotunda is the fitting point of unity in plan and external effect. The original design was by T. Cooley (1776), carried on (1786-1800) after his death by J. Gandon. The façade facing the river consists of two plainly-treated three-story wings, enclosing a three-sided open court on either side of the centre, each closed in towards the Quay by an arcaded screen-wall, with a central carriage archway. These screens maintain touch with the centre block, which is divided into three by a six-columned, pedimented portico, slightly advanced. The feature, however, of the building is the great rotunda, rising out of and above this centre block. It is perfectly circular and unbroken. The order, of great height, standing on a high plain podium, is crowned only by its entablature, above which two gradins lead back to the low cupola devoid of any lantern. The dome, therefore, is seen here in its simplest and most classical form, and as this is one of the types which presented itself to Bramante for his design of St. Peter's, and is, perhaps, that which he intended to employ, it is worth while to examine its effect in this instance. The first impression that it makes is that the lowness of the cupola proper undoubtedly diminishes the powerful effect of a dome of this diameter; secondly, that it is very graceful; and, lastly, that the order proper gains greatly in importance and effect. Close at hand, however, as from one of the side courts, there is the defect that the cupola disappears altogether, the drum ends with the great curving lines of the entablature, and possesses the unfinished effect of a mere cylinder.

To proceed to the interior. The main portico has a segmental background leading to an oblong vestibule, with an oval top light, and having columned exedræ at either side. Passing directly into the rotunda of 64 ft. diameter, a grand effect is at once realised in this great stone hall, which is treated in a somewhat unusual fashion. There are eight recessed porticoes *in antis* in the circuit of its walls; four are entrances at the cardinal points, while the others are openings into the four courts, from which the building derives its name.

The piers between are large, solid segments pierced with niches below and plainly treated above (there are sundry cracks in the dome piers, more especially about these niches). The Corinthian columns are doubled in the depth of the wall, the openings to the courts are now closed with wood panelling. Above the unbroken entablatures

* The sculpture of the building, to the architect's design, was never completely carried out, to his great regret.



rules a high attic, which conveys the idea of being really the springing portion of the cupola. Over this are eight windows, one over each portico below, all involving a square-shaped cut into the curve of the dome; moreover, these windows being on their outward face bounded by the gore lines of the exterior, produce a most singularly distorted effect. Above is a second string starting the lozenge coffering which reaches up to the central eye. It is a frankly hideous scheme emphasised by bad decoration; the ground of the coffers being blue, while the plaster arabesques between the dome windows are relieved on salmon pink; there are figures in low relief of Justice, Wisdom, &c., from whose heads spring stems growing out into scrolls which form a band round the dome. The pity is that the whole dome surface is not left unbroken, as at the Pantheon, and the lighting made dependent upon the eye alone as in that example.* It springs, in fact, at the top of the attic, and the subsequent divisions only disguise the nobility of its real curvature. The cupola visible externally is, of course, a roof at a much higher level.

The Courts resemble each other; they have segmental vaulted ceilings, with intersections for clearstory lighting, helped by large lunettes in the spandril of the vaults over the Judges' seats. These are placed in a wide, shallow apse with a half dome over; a wooden canopy and curtains protect Justice from any draughts, but produce a curious effect from the great likeness of the Bench to a Royal box at the theatre.

Turning up Church-street just beyond the Four Courts, on the left is St. Michans, a curious old church founded 1095. The tower is a rebuilding in 1686 on its original mediæval lines, though the west door at its base has pilasters with a broken scrolly pediment, a type not common in Dublin. Some of the old Dutch work is retained in the interior, which, however, suffered a "thorough repair" as recorded in the inscription of 1828. The interior is quite bare with a flat ceiling and wooden gallery, which last has, however, been tampered with. There are some old monuments and a curious crypt below.

By turning down St. Mary's-lane on the right the Fish and Vegetable Market is reached, a large area roofed by spans of glass and iron on columns, and enclosed by brick walls, which present two frontages in red and yellow brick arches, broken by entrances flanked by granite columns. The ends of the façade to St. Mary's-lane are canted to provide other entrances at these points. St. Mary's-lane ends in Capel-street, which runs northwards to Bolton-street, off which, by a lane to the left, a fragment of the old Linen Hall, 1720, now a drug warehouse, may be visited. In Henrietta-street, a turning on the same side a little higher up, are lofty four and five story plain brick houses built about 1790, with old ironwork in the area railings, while in one case there is a heavily rusticated, columned doorway, of a Palladian type, but not common in the city. Nos. 4 and 5 have staircase halls of some interest. Henrietta-street is closed at the upper end by a curved screen of arches, intended to reconcile its axis with that of the fine block of the King's Inn, which is askew to the street. This building is not so well known as its merits deserve; both fronts are of interest, but the main façade gains by the possession of a fine lawn in front which adds greatly to its effect. It is well detailed and carried out in granite to the design of James Gandon in 1776. Two fine caryatid doorways with decorative male and female figures in pairs, on either side of the centre, mark out the entrances. Over a low attic in the centre is an open cupola lantern of the Corinthian order crowned by a simple copper dome, which is the feature of the building from a distance.

From the King's Inn grounds is seen, standing out on rising ground, the terminus of the Midland Great Western Railway, called Broadstone Station (*see* lithograph). This is a remarkable design (1846: by John Mulvaney), in granite, but unfortunately not of a perfectly homogeneous character. The station shed is flanked by a long colonnade which, good in itself, is too small in scale, and light in character, for the immense mass of the front block containing the Company's offices, which the architect has elected to treat on the lines of an Egyptian pylon. Wisely, however, he has adopted Greek detail, and assuming, as seems reasonable, that the end of a great railway line, an iron road of vast extent, demands some vertical mass to express its completion, it must be admitted that this design is a more reasonable artistic expression of the fact than, say, the great granite portico of Euston. Here the central feature is internally a top-lit hall, carried out in a massive Greek Doric style. Eastwards, in Dominic-street, is St. Saviour's Roman Catholic Church, with an incomplete quadrangle of ecclesiastical buildings. The church was built by the late J. J. MacCarthy about 1859 on Pugin lines, the adjacent buildings by the late J. L. Robinson.

From Dorset-street, running northwards, an extraordinary Chapel of Ease, St. Mary's, can be seen on the left. It was built (1840) by G. Semple, for Archbishop Magee, as a fireproof church. It has a parabolic vault, with lofty intersections to the side lancet windows, heavily buttressed outside. Originally it was roofed also in stone, but is now slated. Continuing up Dorset-street, and turning on the right, in Upper Gardiner-street, is the Roman Catholic Church of St. François Xavier (1832: J. B. Keane), which also has a Greek Ionic portico. The street ends in Mountjoy-square, of a similar character in general aspect to the other squares of the city, though built within this century.

From the north-west corner of this square a straight street runs into Rutland-square, at the upper end of Sackville-street. Charlemont House (probably by Sir W. Chambers, about 1759) occupies the centre of the north side of the square. The house, being set back with quadrant screen walls, has a fine approach. It is an astylar design of three lofty stages crowned by a modillion cornice. The ground floor is rusticated, with an arched doorway flanked by small Ionic columns in the centre. At the first floor the windows have segmental and triangular pediments alternately, while above the openings are oblongs with plain entablatures. There

* One would be inclined to look on this treatment as a modification by Gandon, to differentiate this rotunda from that at the City Hall, also by Cooley.

are good spaces of plain walling between, and around the windows, to which much of the effect is certainly due. The staircase inside has an apsidal first landing, with a half dome over, the main body of the stairs having a barrel vault.

On the west side of this Rutland-square are some well-preserved sets of old Dublin area railings, with curious open standards of wrought-iron, at the corners of the steps up to the entrance; these are about 10-inch square and 4 ft. 6 in. high to the top of the knob finials. It appears, however, from a few remaining examples, of which there is one just close, that the centre upright originally ran up as the lamp-holder, and on examination many of them can be seen to have been cut down in height. The present finish of the standards is by scrolls set in diagonally, for the apparent support of a central ball or other finial, of which there are numberless varieties.

At the lower-side of Rutland-square, and therefore at the head of Sackville-street, is the Lying-in Hospital by R. Cassel (1751-7), to which the Rotunda is attached (*see* lithograph). It is a somewhat feeble design—the parts also do not seem to be wholly in scale; for instance, the order of the quadrant wings is too small, while the large scale of the bases of the main order at the first floor level destroys the character of the Venetian window of the centre. The Rotunda (by G. Ensor: 1757) has a curious frieze of drapery and bulls' skulls, in Wedgwood ware, hung on to the granite background, against which it is forcibly relieved by its light colour and stoneware texture. The slated cut-off cupola that appears behind the parapet detracts from the effect of this circular building, which has further suffered by later additions hiding a part of its circle and destroying the original communicating corridor all round. The interior circular room is very poor, having a flat, apparently sagging, ceiling, and very coarse detail over the windows.

The adjoining ball-room, by R. Johnston and F. Trench, is a curiosity. It is in three bays formed by hollow piers of advanced columns, carrying segmental flatly coffered arches enclosing very flat cross vaulting. A central dancing space about 23 ft. span is thus formed, with a raised daïs either side of about 8 ft. each. The entrance is in the centre of one long side, and there is a window in the back wall of each of the hollow piers opposite. It is possible that the idea of this room was suggested to the travelled amateur, who has the credit of the design, by the loggia of the Palazzo del Te at Mantua, by Guiliano Romano.

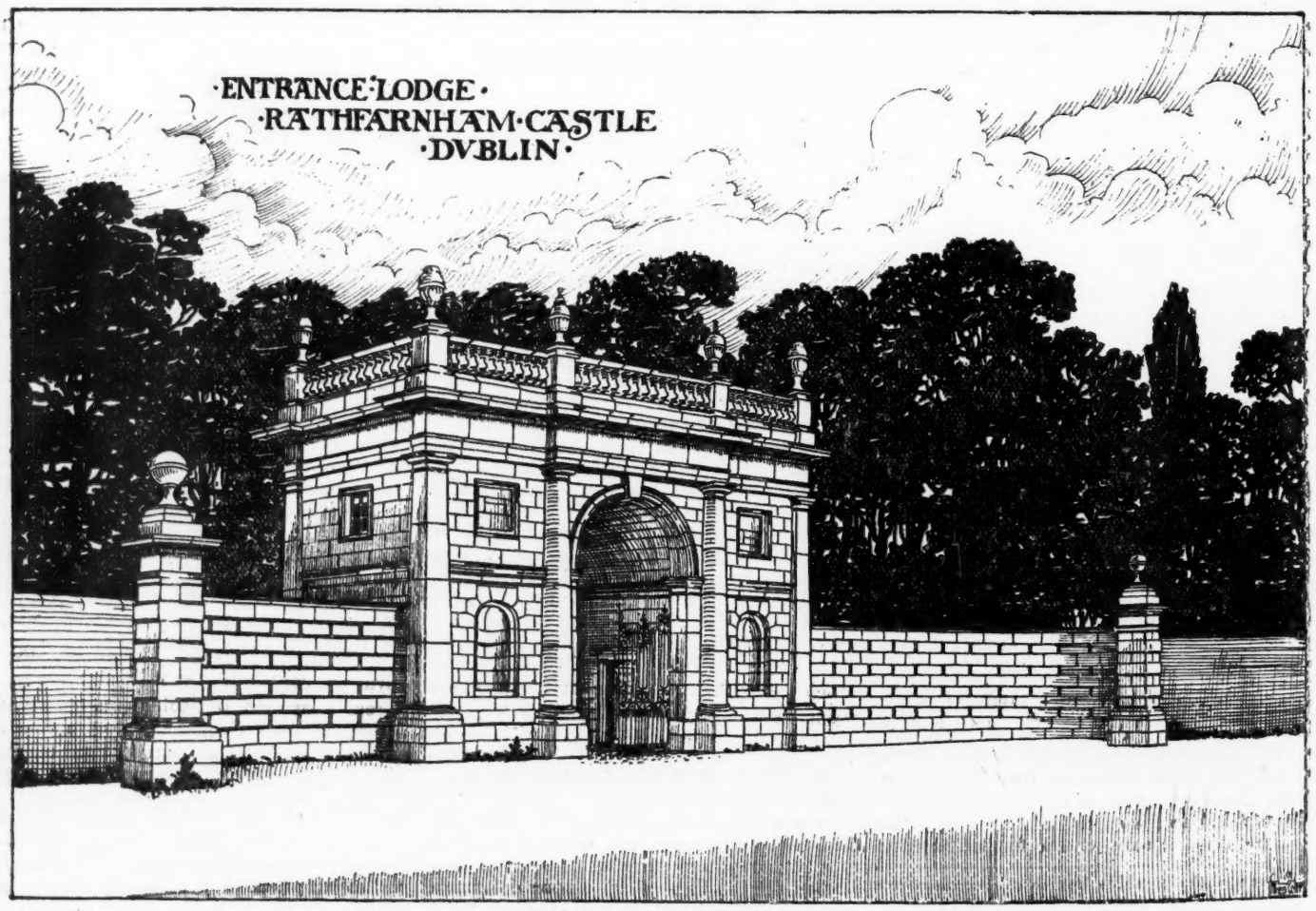
Here at the head of Sackville-street, from which we set on the first tour through the southern half of the city, ends our extended, if flying, visit through the northern half; and there only remains a tram ride out to Rathmines for those who are curious to see one suburb at least, and a modern, if small town hall.

Proceeding southwards by the Rathmines tram the Roman Catholic Church of Our Lady of Refuge is reached on the right (the late Byrne, City architect). The grandiose Corinthian portico façade has little relation to the structure behind it, which is a domical interior of a Greek cross plan. The arms are shallow, and canted at the angles for the pendentives, over which is a very slight drum disagreeably overhanging, except where it touches the crowns of the four enclosing arches. The Rathmines Town Hall, by Mr. Thos. Drew, has been visible by its tall campanile for some time past down the road we have been travelling. The building is in red stone, and is carefully designed and detailed. It presents a gable up the road and another to the street flanked by the tower at the corresponding end. The façade consists of a rusticated ground story treated lightly with the same Early Renaissance feeling that marks the whole.

Riding back on the tram to the centre of the town affords a space for a few hasty reflections on what has been seen. The first thought probably will be that, fine as the classical buildings of Dublin are, they do not add much to the general estimate of the applicability of the style to modern architecture. In this aspect it is mortifying that the best building, the Bank, is precisely that one which has an apparent lack of three of the essentials of modern work—viz., windows, chimneys, and roofs. As regards sky line, however, another English demand, the Customs House and the Four Courts are decidedly above the average of classical compositions, while there is an expression of idea about the latter which is quite a modern note. It is interesting also to notice that in this Irish classical work there is a certain spontaneity of design which we should like to assert is racy of the soil. An absence of the dead formalism of such classic as that of the British Museum in London, or the National Gallery in Edinburgh, would excuse many breaches of convention. Something again may be ascribed to the general use of granite for important works, whose hardness must always have a restraining influence, while the introduction of Portland stone for the features, when managed with judgment, produces a fine colour effect in silver and grey.

Turning to the Dublin houses of the period, a general impression is that, excepting a few special examples, they are too little cared for in the matter of exterior; but that internally they are admirable, and even magnificent, exponents of the social habits of that day. In churches, unfortunately, the result is practically nil; excluding the two old cathedrals, it is difficult to think of a good example. Coming even to modern times, about 1860 there was a certain flutter, but St. Andrew's and St. Saviour's, Dominic-street, to take an example on each side, are far below what has been done in England; and since that date church work seems to have positively gone back. In a city where extremes meet, *a priori*, one might expect something of special value; but, in fact, controversy seems to be a sterilising agency. In schools, also, there is an absence of anything so expressive, and adapted to its purpose as a London School Board building. In street architecture it is the financial institutions of College Green and Dame-street which are the most marked features of modern times.

In the general aspect of the city, up to the present, Dublin may be said to be practically free from the worst side of modern building enterprise, and it is to be hoped that, in any future development, the general character of the monuments of the old capital may have



A Gateway by F. Gandon.

a restraining influence on modern designs. To the present day architectural ideals, of which so much is heard in other centres, the architects here seem by their works indifferent. The impression of a visit is that their aim is towards a careful and richly-detailed exposition of well-recognised styles. The idea of attempting to develop from each building a design according to its special characteristics does not appear to be received as yet in Dublin.

We have to thank Mr. Drew for the loan of some valuable engravings, some of which have been reproduced in our lithograph illustrations; Mr. F. C. Core for the sketches of iron work and for the drawing of Gandon's Lodge at Rathfarnham Castle; and Mr. F. H. Jermyn for the drawing of Chambers's design of the "Marino" at Clontarf. Others of the lithograph illustrations of Dublin are mostly from photographs by Mr. W. Lawrence. Beyond the loan of drawings, we have specially to thank Mr. Thos. Drew and Mr. W. M. Mitchell for the assistance and information which they placed at our disposal in regard to buildings in Dublin.*

NOTES.

Theatre Safety and Pantomimes.

THE Christmas Season has been remarkable for the number of fires in places of public entertainment, and though fortunately no loss of life has to be recorded, several important buildings have been destroyed. Of these we may first mention the new Palace Theatre at Plymouth, which had only been opened a few months, and was practically gutted, as far as the interior was concerned, on the morning of the 23rd ult. At Marburg (Austria), the Municipal Theatre was entirely destroyed a few days before, and the Union-street Music Hall at Inverness was burnt out earlier in the same month. Several American theatres have also been destroyed. Of minor fires again, there was a slight outbreak at the Royal Music Hall, which prevented the evening performance last week; another at a Manchester theatre, just at the close of the Harlequinade, whilst others are reported from West Bromwich, Leeds, and Brighton. There have also been some panics from unimportant causes at Vienna and Rotterdam. Taking into consideration the number of minor fires at theatres in the Pantomime season, of which the public never hear anything, much less the public authorities, we think that a word of warning might be timely, and we would address this, not only to the various managements concerned, but also to the architects who are nominally in charge of many of the buildings, and who, with a little attention, will often find how some dangerous practice may have crept in which would be obviated by a few words of advice to the stage hands or mechanics.

Boiler Explosions.

THE sixteenth report on the working of the Boiler Explosions Acts, 1882 and 1890, has just been presented to the Secretary of the Board of Trade. It deals with explosions which occurred during the year ending June 30, 1898. The total number of explosions during the year was eighty-four, or fourteen more than the average of the last twenty years; the number of lives lost was thirty-seven, or eight more than the average; and the number of persons injured was forty-six, or fifteen less than the average. Architects and contractors will find little cause for complaint in the report. Not a single kitchen-boiler explosion is recorded, and only two explosions of heating-apparatus, and neither of these caused either personal injury or loss of life. The explosion at the Marylebone Presbyterian Church was referred to in our article about a month ago, and was due to the rupture of one of the pipes, the apparatus being of the high-pressure type; the other explosion was at Middleton in Lancashire, and was due to the over-heating of the boiler through shortness of water, consequent on the neglect of the attendant. There can be no doubt that the paucity of explosions in boilers for domestic water-supply and heating apparatus is due to the absence of frost throughout last winter; and this fact should keep us from being lulled into a false sense of security during the winter which is now upon us.

* This series of illustrated articles was begun in our issue of September 26, 1896, and is concluded this week. A list of those towns dealt with will be found on page xvi. of last week (December 31, 1898).

The Paris Exhibition.

THE route for the circular railway at the Paris Exhibition has now been decided on. It will be a single-line railway, running in a complete circle, the train starting from the left-hand side of the Esplanade des Invalides, and following Rue Fabert to the first station, towards the centre of the Esplanade. It will then cross Rue de Grenelle on a viaduct, and take up the right side of the Avenue de la Mothe Piquet to the Champ de Mars. Thence it will turn to the right and follow the Avenue la Bourdonnais, where there will be a descent to a station at the Galerie des Machines. At the end of the Champ de Mars the railway will again rise, by a curved gradient, to the level of the Quai d'Orsay, where there will be a station at the Exhibition des Armées, and will continue the line of the Quai d'Orsay, crossing the Avenues Rapp and Bosquet in an open cutting. The line will then arrive at the station for the portion of the Exhibition reserved to foreign countries. After crossing the Boulevard Latour Maubourg on a viaduct, the line will take a turn to the right to avoid the "L'Ouest" railway, and return thence by a new curve to the Esplanade des Invalides, after a course of 3,300 mètres. The traction will be by electric power. In connexion with the Exhibition we may add here that the Spanish Government are about to erect a fine pavilion on the Quai d'Orsay, in the style of the Spanish Renaissance. M. José y Velada, of Madrid, is the architect.

Cartwright Memorial Hall Competition.

THE Cartwright Memorial Hall, proposed by the Bradford Corporation, is a rather curious kind of scheme, as it is to include on the principal floor a room for the purpose of an art-gallery, along with a suite of entertaining rooms—Mayor's Parlour, Reception Hall, and Banqueting Hall, "which are also to answer for art-galleries." If this means that they are to be lighted in the best way for showing pictures and works of art, *i.e.*, from the top, they will be spoiled as entertaining rooms and the façade of the building will be spoiled also; if, on the other hand, they are to have a range of windows, they will be spoiled as art-galleries. The Corporation had better at all events state rather more clearly what is their idea in regard to these rooms; but they will probably have "questions" on the subject from competitors. The terms of the competition are not altogether satisfactory. The architect who receives the first premium will be employed to carry out the building, but his premium will be merged in the commission, the premium being in fact here again called by that new and barbarous term "merger," which seems to have been invented to give a colour to this system; and nothing is said of travelling expenses. Moreover, the building is to be carried out for 40,000*l.* inclusive of architect's fees, and if a bonâ-fide tender is not obtained to carry it out for 38,000*l.* the Corporation may withdraw the premium and decline to carry out the works. They might at least allow the architect the usual 10 per cent. margin. Mr. Waterhouse is the assessor, but we should hardly think he is responsible for these points in the conditions.

The Cardiff Town Hall Scheme.

WE are glad to find that an attempt which was made to postpone the building of the Cardiff Town Hall has failed, the resolution "that the architects be instructed to proceed with the plans and specifications and submit the drawings to an early meeting of the Committee for final approval" having been carried, at a special meeting of the Town Hall Committee on Tuesday last, by nine votes to six. We feel sure that this result will not only be welcome to the architects and to their professional brethren, who have regarded their fine design with considerable interest, but that it is in the best interests of the town itself. If the scheme were postponed now, even for a nominally definite period, it is only too probable that the definite period would stretch itself out indefinitely, and perhaps that the buildings (on that site at all events) would never be carried out at all; and it must be evident to any one who reads the report of the meeting that the longer the scheme is postponed the more it will cost to carry out. It is to be hoped there will now be no more vacillation in the matter.

Companies *v.* Local Authorities.

FORMERLY we used to hear a great deal of complaint against the rate-aided competition of Local Authorities with private electric lighting companies. It is now the turn of the Local Authorities to complain. The partial success which the General Power Distributing Company's Bill has already obtained in the House of Lords has led to the introduction of many other measures of equal magnitude, and with equally serious consequences to many municipalities. The General Power Distributing Company's scheme is to supply electricity for lighting, traction, and, other purposes to a district having an area of two thousand square miles and including the towns of Sheffield, Lincoln, and Nottingham. The central generating station is to be at Worksop, in the midst of a colliery district where coal slack suitable for generating purposes can be obtained at 2*s.* per ton. The promoters expect that, owing to the wholesale demand, they will be able to supply electricity at 1*d.* or 1½*d.* per unit. Their proposal seems feasible, and the system seems to be far better than the present system of isolated networks each with its own small generating station. The Parliamentary Bill is supported by numerous consumers in the districts affected, but is actively opposed by nearly all the Local Authorities. The Mayor of Sheffield is particularly active in his opposition to the Bill, as he says that, if it passes

it will be a serious blow to Sheffield, as the Corporation has only recently purchased the undertaking of the Sheffield Electric Light and Power Company. The Municipal Corporations' Association is calling on all its members to do their utmost to defeat this Bill, or at least to get it amended so as to prevent the Company from competing with the Local Authorities who are at present supplying electric light in their own districts.

Bacteriolysis.

THIS convenient word, coined, we believe, by Mr. Adeneny, is now beginning to supersede the cumbrous phrase, "bacterial purification of sewage;" and as the operation it is intended to designate is likely to be more and more largely carried out, the word had best be adopted without delay. Among the various methods of bacteriolysis the "septic" is perhaps the best known, and a partial trial of this system on a large scale is about to be made at Morecambe, in Lancashire. We say "partial" because the scheme proposed by Mr. H. Bertram Nichols, A.M.Inst.C.E., and described by him in a small pamphlet* which lies before us, does not include the filtration of the effluent from the "septic" tank. In other words, a partial purification only is intended, and the tank-effluent will be conveyed into the bay below low water. Whether this will be entirely satisfactory remains to be seen, but the pamphlet is worth perusal, as it describes a scheme designed to meet a somewhat peculiar case. It is also tersely written and well illustrated.

A Public Park for Ealing.

IT is satisfactory to find that the Ealing District Council have accepted Sir Spenser Walpole's offer to sell to them the Walpole property for 40,000*l.* as a public park. In so doing the Ealing District Council have shown public spirit and foresight. At present Ealing is not an overcrowded locality, and there are probably not a few inhabitants of the place who think that these thirty-one acres of open space are not required. But the true policy for the various public bodies in the vicinity of London is to obtain as much land as possible for open spaces before it is covered with buildings. It is greatly to be regretted that public efforts have not been much more largely made to keep as playgrounds and "lungs" various pieces of ground which are now covered with buildings, and which comparatively a few years ago might have been obtained at no very great cost. Any one who will take the trouble to observe, for example, the way in which building has increased along the Metropolitan Extension line will have an object lesson on the necessity for the systematic preservation of some amount of open space in the different localities around London, before the builder covers every field with his handiwork.

Hertford College, Oxford.

WE gather that the designs prepared by Mr. T. G. Jackson, R.A., for a further extension of Hertford College, provide for the preservation of the fifteenth-century doorway, with its sculptured panels of the Annunciation, of the Chapel of Our Lady. The chapel is depicted in the background of Mr. H. W. Brewer's panoramic view of "Mediæval Oxford," published by us on January 3, 1891. It appears that it was either hexagonal or octagonal on plan, somewhat like the Lady Chapel on the Mount, at Thetford, and was still standing, just by the ditch at Smith's Gate, when Aggas made his drawing of Oxford. The chapel of late years has been known as St. Catherine's, a mistake that is due seemingly to the modern name of the street in which Hertford College is situated. That street was formerly called Cat-street—being the "Vicus Cattarum" of some old maps and surveys. The new hall, with kitchen, buttery, bursary, and a set of undergraduates' rooms, at Hertford College, were built in 1887-8, after Mr. Jackson's plans and designs; the fronts facing the schools and New College-lane, designed by Garbett (1820), were built for the then Magdalen Hall, at the cost of Magdalen College. James Parker mentions (1848) the sets of rooms in the angle between the Principal's old lodgings (built *temp.* James I. by Dr. Theodore Price, the Principal) and the chapel as forming a portion of the buildings erected by Dr. Newton, who in 1740 refounded Hart, or Hertford, Hall as a college; the chapel was built by him and consecrated on St. Catherine's day, 1716.—Gutch (1786) cites the then existing buttery with rooms above, and kitchen, built by Phillip Rondell, who was Principal *temp.* Elizabeth, and gate house, by Thornton, 1668. After a fire in their buildings, by Magdalen College, the authorities of Magdalen Hall migrated to St. Catherine-street, where the two foundations were afterwards reconstituted under the former name of Hertford College, mainly by the munificence of Mr. T. C. Baring.

Southampton Bar.

IF, as is reported, the Mayor of Southampton wishes to remove the old Bargate, he is no real friend to the town. Southampton is not in itself a very interesting place, and after the destruction of an old monument like the Bargate it will become still less so. If a clearance is really wanted, the alternative proposition that has been made is better, viz.: to pull down some of the modern houses adjoining the Bar, and make a sweep of the road on each side, leaving the ancient structure in the centre. But is either scheme really necessary?

Duffield Castle.

IT is stated that the Hon. Edward and Frederick Strutt are about to present to the public the site of Duffield Castle (known as Castle Orchard), and to vest the ground in the National Trust. The castle, standing on an eminence that rises 70 ft. above the Derwent, at the north end of the old road to Belper and Matlock, formerly belonged to the house of Ferrers, Earls of Derby, having been erected by Henry de Ferrers, *temp.* William I., who granted him 114 lordships in the county, besides estates elsewhere. In 19 Henry II., William de Ferrers, second Earl, lost his possessions for rebellion; they were restored to his son William by King John, but were again confiscated after the capture at Chesterfield and the conviction for high treason against Henry III. of Earl Robert, who had joined Simon de Montfort, when they were given, according to Dugdale and Camden, to Edmund (Crouch Back), Earl of Lancaster, whose elder brother, Edward, ravaged with fire and sword the Earl Robert's lands, and destroyed Duffield Castle, 1266. To Edmund succeeded in turn his sons Thomas (beheaded 1322) and Henry, Earls of Lancaster, from the latter of whom the property passed to his granddaughter, Blanche, who brought it in marriage to John of Gaunt, whose son (Henry IV.) was created Earl of Derby. In the course of some excavations made in 1886 by the Derbyshire Archæological Society were laid bare the foundations of the Norman keep, 98 ft. by 95 ft., its walls being 15 ft. thick; in the larger of the two basement rooms was found the well, which, though not lined with stone, was in excellent preservation and contained 18 ft. of water, together with a great deal of reputedly Roman pottery. The moat, for the most part filled in, encloses 5 acres.

Mr. Gould's Palace of Sports.

IT is rather hard on the American people that some of their millionaires will persist in displaying so much selfish ostentation. For the Palace of Sports, which it appears that Mr. George Gould is to begin to build for himself in February, is purely a piece of show. It is to be, we learn from the *New York Herald*, a huge structure, the main walls of white brick, the pillars and visible parts of solid marble and granite, and it is to be the finest place of its kind in the world. The arena will afford room for riding, polo, and other outdoor sports to be enjoyed under cover. In addition, in one corner of the building will be a swimming-bath of marble, in another a gymnasium, in a third bachelor apartments,—we presume something in the nature of dressing-rooms—and the remaining corner will hold a theatre. This mammoth pleasure palace is to be built near Lakewood, in New Jersey. Such an edifice as this is simply one form of advertisement—it says that Mr. Gould is worth so many millions of dollars. The same result might be obtained in a much shorter time by a paragraph in a newspaper to the effect that Mr. Gould's balance at his bank amounts to such-and-such a sum. The spending of money on this building contrasts in a singular manner with Lord Iveagh's wise and generous kind of gift to the city of Dublin which we referred to last week.

How They Do Things in France.

WE recommend those who are interested in public art in this country to look at the account, given under the head of "Illustrations," of the decorative work carried out at the new Paris Opéra Comique. The exterior sculpture is by the greatest French sculptors of the day; for the decorative paintings in the auditorium, the staircases, and the foyers, a galaxy of the most gifted French painters have been employed; and all this paid for by the Government, for the public good and for the encouragement of national art. When shall we see such a thing in England? It is as if we had a London theatre decorated with sculpture by Mr. Gilbert and Mr. Onslow Ford, and the halls and staircases painted by Mr. Watts, Mr. Tadema, and Sir E. Poynter. Instead of that, we have theatres with sculpture done by stone-carvers and paintings by decorating "firms."

THE "LORD HADDON" COFFEE HOUSE, ILKESTON.—This building has just been opened in Bath-street, close to both the Midland and Great Northern Railway stations. Mr. S. Richards, jun., was the architect.

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* "Morecambe Bay Sewerage Scheme." By H. Bertram Nichols, A.M.Inst.C.E. London: Hodgetts, Limited.

MAP OF THE COUNTY OF LONDON, SHOWING THE BOUNDARIES OF THE SURVEYORS' DISTRICTS UNDER THE BUILDING ACT.

THE map which we give as a supplement this week has, by the courtesy of the Building Act Committee, been specially prepared from the Official Map of the London County Council. We feel sure that many of our readers who have been engaged on work near one of the boundaries may often have been uncertain as to the actual district, and we hope our map may help to remove such doubts in future, and in other ways be found useful to our subscribers. Great care has been taken in the production to ensure accuracy—not, we venture to hope, without success.

It is twelve years since we issued a similar map, which in its day served a good purpose, but the London of to-day differs widely from that of 1887, and no excuse is needed for the present publication. We may take this opportunity of thanking several District Surveyors and others for their valuable suggestions. Some of these we have gladly adopted, and are sorry that, through want of space and from other causes, we have not been able to make use of all.*

Illustrations.

A HALF-CENTURY'S CHANGE IN LONDON.

WE have put this as the most appropriate general title to the two views on the Thames from a point near Waterloo Bridge, though of course it only represents a comparatively small portion of London.

The illustration at the top is from a water-colour drawing made by a lady in 1848, and was shown to us by its present possessor as an interesting memorandum of the aspect of that portion of the Thames and of the opposite bank at that date. Underneath is a drawing specially made by Mr. H. W. Brewer from the same point of view, showing its appearance at the present day. In the modern view the mass of the Houses of Parliament rises on the right to balance that of St. Paul's on the left; the Charing Cross Railway Bridge, with its ugly iron pins, takes the place of the graceful lines of the old "Hungerford Suspension Bridge" (now at Clifton); there are more steamers and fewer sails on the river. By a pardonable bit of "cookery" of the perspective, the Egyptian obelisk has been got in on the right of the picture.

The general air of crowding and life in the modern view, as compared with the quiet look of the old one, may be partly due to difference in style of execution; but to a considerable extent we imagine the difference really represents the increasing crowd and turmoil which has developed during half-a-century of the growth of modern London.

NEW VAUXHALL BRIDGE.

BEFORE describing the proposed new bridge to be erected across the River Thames at Vauxhall, we think it advisable to give a short description of the existing structure which is now being demolished.

The old bridge was commenced in the year 1811, and opened to traffic in 1816, and is composed of two abutments, eight piers, and nine arches. The abutments are supported on a grid of piles, the tops of which are about 5 ft. to 7 ft. below the surface of the foreshore, and in the case of the piers no piles were used, but only a grid composed of 16-in. thick timbers, laid on the top of the ballast or clay, upon the top of which the masonry and brickwork were built. No information exists as to whether the piers were built within coffer-dams or not; but, from the high state of the water in the river at the period when the bridge was built, caused by old London Bridge, it is believed that coffer-dams must have been used.

The piers and abutments are composed of blue Bristol pennet stone facings, backed up and filled in with brickwork and all set in lias lime mortar; the piers, above the springing level of the ribs, are hollow, with occasional cross walls, and the tops arched over to carry the roadway. All the brickwork, so far as it has been broken into, is good work, and it is assumed that the same will be the case throughout. The engineer, when designing the bridge, kept the springing line of the ribs at the same gradient as the roadway, and by this means one set of patterns only was required for the ribs; the effect of this being that the piers are all at different heights, instead of the same, as is the case in all later bridges constructed across the River Thames. The ribs, bracing, floorplates, cornice, parapet, &c., are all made of the best cold-blast cast iron. The ribs are made in three segments, and to them are cast the spandril pillars, &c., so that great rigidity was obtained in a light structure. The ribs were braced together by means of lattice bracing at regular spaces, and leaded in and thoroughly well bolted together; the plates carrying the roadway were laid on the top of the upper member of the spandrel pillars, and held in position by means of long through bolts and muff couplings. The spans of the arches are 78 ft. throughout, and the maximum headway at the centre span is 26 ft. above Trinity high water. Each span consists of ten ribs which bear at their springings on cast-iron skew-backs built into the brick and stonework, no holding-down bolts being used. From the construction of the ribs it has been found during demolition, that very little horizontal thrust could have been exerted, as when the centre portion of the rib was removed the rusting up of the springing ends in the skewbacks was sufficient to keep the free portion in position, which weighed about five tons. The original cost of building the existing bridge was 259,681*l.*, and it was purchased by the late Metropolitan Board of Works in 1879 for a sum of 75,000*l.*, and thrown open to the public free of all tolls.

In this number we give a reduced impression from the half-elevation of the new Vauxhall Bridge, also a cross section to a larger scale showing the piers, &c., and a half-longitudinal section on the centre line of the bridge, to the same scale as the elevation. The rock-faced voussoirs, introduced to give boldness of effect, will project from 6 in. to 8 in. beyond the spandrel face. The lower columns of the piers project beyond the face for about ⅛ of their diameter so as to throw a good shadow on to the flat portion of the pier. The upper columns are intended for ornament and also to carry the lamps which will be used for navigation purposes and for lighting the bridge, and the tops will be surmounted with bronzes. The architecture of the bridge generally is a free Tuscan, but certain deviations had to be made, so that it was almost impossible to adhere throughout to the order in its entirety. The abutments are carried above the level of the footway, and it is intended that statuary of some description shall be placed thereon, but not necessarily that shown on the elevation.

The width of the new bridge between the parapets will be 80 ft., composed of a carriageway 50 ft. wide between the kerbs, and with two 15 ft. footways; all other dimensions as to spans, &c., can be ascertained from the half longitudinal sectional elevation.

The bridge throughout will be constructed of Portland cement concrete of varying strengths, according to the work that it has to do. All exposed surfaces of the abutments, piers, and bridge, except the under side of the arches, will be faced with the whitest granite obtainable.

The arches throughout will be in two pieces pivoted at the centre and the springing; by adopting this means of construction a considerable amount of material is saved in the haunches and springing, as the curves of pressure are compelled to pass through the pivots. The neutral axes and equilibrium curves of the arches are in the same line, so that the compression is equal over the arch at any point of its cross sectional area. The maximum compression does not exceed 17 tons per square foot on the concrete, due to dead load only; the live load, which bears a very small ratio to the dead load, has not been taken into account in calculating the stresses on the arch, but is taken into account for the loads on the foundations.

The tests made with the 4 to 1 Portland cement granite concrete for two months' old material to be used in the arches crushed at an average of 238 tons per square foot, so that allowing 17 tons per square foot as the compression in the arch, this will give a factor of safety of 14 to 1, which must be considered as very high. As concrete takes about two and a-half to three years to attain its maximum strength, it is assumed that the ultimate crushing strength ought to be as high as 400 tons to the square foot.

The bridge is from the design of Sir A. R. Binnie, Chief Engineer to the London County Council, and will be carried out under the immediate superintendence of Mr. E. P. Wells, of the Engineer's Department of the Council, acting as resident engineer.

We have confined ourselves to giving information as to the structure of the new bridge; of the design our readers can judge for themselves from the illustration.

We have to thank Sir A. Binnie for his courtesy in lending the drawings, and Mr. E. P. Wells, the resident engineer, for furnishing us with the above particulars in regard to the old and new bridges.

KEW BRIDGE.

WE give an illustration, from a drawing by Mr. W. Monk, of this picturesque bridge over the Thames at Kew, which will soon be unavoidably demolished.

A few words as to the history of the bridge may be of interest. By an Act, 31 Geo. II., powers were given to R. Tunstall, owner of the ferry, to erect a bridge in its place. His bridge consisted of eleven arches, the seven central arches being of wood, the rest of brick and stone. In 1782 an Act (22 Geo. III., c. 41) was passed, on the petition of Tunstall's son, for rebuilding the bridge, which was accordingly done after the designs of Payne—architect also of the bridges at Walton, Chertsey, and Richmond—and the present structure was opened in September, 1789. Tunstall sold his undertaking for 22,000*l.*, and it was eventually bought in 1872 by a joint Committee of the Corporation and the late Metropolitan Board of Works, in terms of the "Kew and other Bridges Acts" of 1869 (and 1874), for 57,300*l.*, the initial claim for compensation in respect of tolls being about 16,700*l.* in excess of that sum, and the bridge was made free from toll. Payne's bridge is 400 ft. long, and 24 ft. wide between the parapets; of its seven arches, which vary in width, the middle and widest arch has a span of 66 ft. and a height of 22 ft.; each of the two adjoining arches has a span of 55 ft., a line of small arches carries the southern approach over the low shelving ground of the Surrey shore.

The King's Collection, in the British Museum, contains some interesting views of the bridge, together with its then rural surroundings, as they appeared in the earlier days of its history. On February 5 last we gave a view, after a drawing by Mr. Roland W. Paul, of the old Shoeing Forge, at the southern end of the bridge, which, it seems, will be demolished for the making of the new bridge.

We understand that Sir J. Wolfe Barry's designs show a bridge 45 ft. wide, and that this width will probably be altered on the plans to 55 ft. at the instance of the Building Joint Committee of the Middlesex and Surrey County Councils; the new bridge will be deemed a county bridge, to be maintained and repaired accordingly.

However much we regret the destruction of a bridge which has so much charm from its simplicity and beauty of line, and the picturesque proportions of its arches, it must be admitted that the practical reasons for its removal are unanswerable. It is too narrow for a traffic which is increasing and is likely to increase still further; the gradients, according to the old fashion of bridge-building, are inconveniently steep for heavy traffic; and the arches, especially the side ones, are so narrow as to form a serious impediment to navigation, especially considering the rapid tide-stream at Kew, which races between the piers in such a manner as often to make it a difficult matter to force a boat through against the tide.

It is gratifying to know that the new bridge is to be of granite, and not a piece of steel engineering, though we fear it is hardly likely that it will present the picturesque appearance of the old one, the beauty of which, it must be admitted, arises partly from the circumstances which constitute its practical defects, viz.: the high curve and the narrowing of the arches towards the shore ends.

LLANTHONY PRIORY.

THE view and plan of the remains of Llanthony Priory form the twenty-eighth of our

The Publisher's terms for mounting will be found on the margin at the foot of the map.

series of "The Abbeys of Great Britain." The historical description will be found among the separate articles commencing on this page.

THE NEW OPÉRA COMIQUE, PARIS.

THE new building of the Opéra Comique at Paris, just completed from the designs of M. Bernier (who obtained the commission as the result of a competition in 1893), replaces the theatre which was destroyed in the fire of May 25, 1887. The principal façade, towards the Place Boildieu, is decorated with six caryatide figures by M. Gustave Michel, M. Allar, and M. Peynot, and with statues in the niches which are the work of M. Puech and M. Guilbert.

The public entrances are in the Place Boildieu and in Rue Favart and in Rue Marivault. The large central vestibule decorated with statues by M. Michel, M. Falguière, and M. Mercié (symbolising "La Pensée," "Le Drame Lyrique," and "L'Opéra Comique"), leads to two state staircases with balustrades in wrought iron and chased copper, designed by M. Germain. There are also four side staircases, as well as a lift to the boxes. The artists have their own foyer; the store-rooms for costumes, and "Étude de la danse," are over the public foyer. A small theatre for rehearsals is placed over the auditorium The stage, lighted by electricity, has service stages at the sides, connected by four tiers of bridges. In the mechanism woodwork has been almost everywhere replaced by iron. There is an extract chimney over the stage intended, in case of fire, to draw off the flames and smoke from the auditorium.

The grand staircase on the right is decorated by a ceiling painting, "La Comédie," and two panels representing "La Tragédie" and "La Danse," which are the work of M. Francois Flameng. On the opposite staircase, on the left, the decoration is by M. Olivier Merson, who has represented in his two panels "La Poésie" and "La Musique," and in the ceiling "Le Drame." The decoration of the ante-room to the foyer is by M. Guifard and M. Joseph Blanc. In the foyer itself M. Gervex has represented the ancient "Foire Saint-Laurent," and M. Albert Maignan has painted subjects from various French comic operas—"Les Noces de Jeannette," "Zampa," "Le Châlet," "La Dame Blanche," &c. The oval salons at the two extremities of the foyer have been decorated by M. Toudouze and M. Raphaël Collin.

In the auditorium the prevailing tone is a light grey—nearly white, heightened with gold, which, under the electric light, produces a somewhat too vivid effect. Among the decorations are caryatide figures by M. Coutan. The ceiling painting by M. Benjamin-Constant, which we have before referred to, is much too sombre in tone for the rest of the decoration. The figures which decorate the proscenium are by M. Marqueste, and the curtain has been painted by MM. Rubé and Masson.

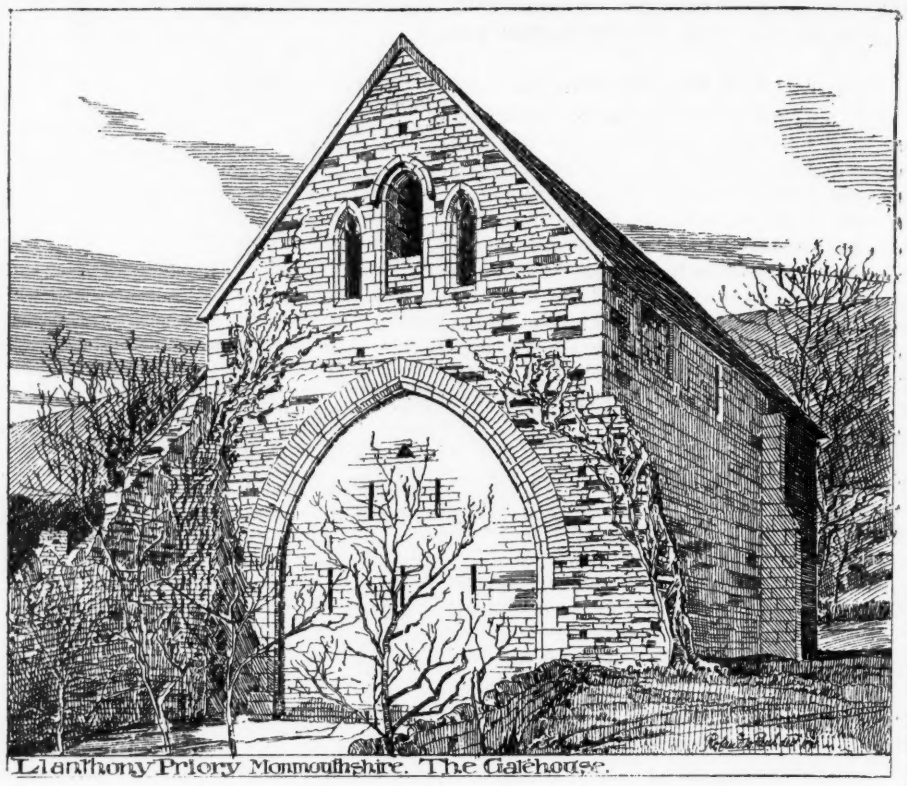
The acoustic conditions of the theatre are in general favourable, but the Parisians have been rather taken by surprise and dissatisfied by the sinking of the band in a pit, as at the Bayreuth Theatre, and complain that there is a want of blending of the instrumental accompaniment with the voices, which is what we should expect. In fact, this system of sinking the band below the floor is only really applicable to the special effect which Wagner wanted, and to apply it to operas on the ordinary model is a mistake.

DUBLIN ARCHITECTURE.

THE seven sheets of lithographs of Dublin architecture are given as illustrations to the article on the subject in this number, forming the twentieth and last of our illustrated articles on "The Architecture of our large Provincial Towns."

The illustration of the Bank of Ireland is from a drawing by Mr. Curtis Green; the four illustrations of "The Houses of Parliament," "St. Patrick's Cathedral before Restoration," "Leinster House," and "The Blue Coat Hospital," are from engravings kindly lent by Mr. Thos. Drew, R.H.A.; the remainder are from photographs, mostly by Mr. W. Lawrence, of Dublin.

All these illustrations are specially referred to in the article—some of them at considerable length—with the exception of the Drill Hall by Mr. W. M. Mitchell, which we have added as an example of characteristic treatment of a building of this class. In regard to the others, the reader may be referred to the leading article in this week's issue.



Llanthony Priory Monmouthshire. The Gatehouse.

COMPETITIONS.

THE NEW JOINT HOSPITAL, ARDROSSAN.—Plans for the building of the proposed Ardrossan and Saltcoats Joint Hospital having been received, and a leet formed consisting of three competitors, a meeting of the joint Local Authorities was held on the 22nd ult., at which the three competitive plans were considered. The competitors were:—Messrs. Fryer & Penman, Largs; Guest Luckett, Glasgow; and Thomson & Sandilands, Glasgow. The firm first named was successful. The hospital is likely to cost 4,000*l.* or 5,000*l.*

BOARD SCHOOLS FOR WREXHAM.—On the 30th ult. a special meeting of the Wrexham School Board was held to consider the award of the assessor on the plans sent in for the proposed new Board schools for Wrexham. The competition was confined to architects practising in the town, and nine sets of plans were sent in. The assessor appointed by the Board was Mr. W. E. Willink, F.R.I.B.A., Liverpool, and he awarded the first premium to Mr. W. Moss, Regent-street; the second to Mr. John Harris, Westminster-buildings; and the third to Mr. J. H. Swainson, Holt-street. The Board asked for plans for accommodation for 1,000 children—400 boys, 300 girls, and 300 infants, and the entire cost, exclusive of building site, was not to exceed 8,000*l.*—Mr. Willink said they could not get what they wanted for the money, and he estimated that the first plan would cost 9,610*l.* to carry out, and the others 10,995*l.* and 10,607*l.*—The Chairman proposed that the assessor's award be accepted, and the 30*l.* premium paid to Mr. Moss.—The Vice-chairman seconded, and the motion was agreed to.

INTERMEDIATE SCHOOLS, WREXHAM.—At a meeting of the Wrexham County School Governors (Grove Park), a few days ago, it was agreed to accept the designs of Mr. Phillips, of Cardiff, for the proposed Intermediate Schools, and award him the first premium of 50*l.*, which was to be merged in the commission if Mr. Phillips has the carrying out of the plans. It was agreed to request Mr. Phillips to prepare working drawings, details, and specifications and submit the same to the Governors with a view to obtaining estimates for the work; but the Governors were not to be liable to him for any payment whatsoever in relation thereto unless it was found that the plans can be carried out by the Governors, and the amount stipulated for—viz., not mere than 8,000*l.*, plus 10 per cent. Mr. W. E. Willink, of Liverpool, acted as assessor.

LLANTHONY PRIORY.*

THE County of Monmouth boasts of two important monastic ruins, Tintern and Llanthony *prima*, so called to distinguish it from Llanthony *secunda* near Gloucester. Tintern has already been described in these columns.† Llanthony is in the north-west portion of the county, on a narrow strip which runs northward between the counties of Hereford and Brecknock. Here in the valley of the Honddu (the "black water") a tributary of the Munnow surrounded by the romantic scenery of the Hatteril Hills or Black Mountains, St. David is said to have had a cell. The site afterwards became that of a hermitage of one William, a retainer of Hugh de Lacy in the time of Rufus. To him and to Ernisius, Chaplain to Queen Maude, the first church, begun in 1103 and finished in 1108, is ascribed. It was dedicated to St. John Baptist, and consecrated by Urban, Bishop of the diocese, and Ramelene, Bishop of Hereford. The church seems to have undergone rebuilding or enlargement by Hugh de Lacy; forty monks were introduced from Colchester, Merton, and Trinity, and Ernisius became the first prior of this house of Canons Regular of St. Augustine. During the reign of Henry I. the priory appears to have been greatly subject to attack, and for this and other reasons a number of the monks were removed to Gloucester in 1136, where a new monastery, known as Llanthony *secunda*, was founded by Earl Milo, Constable of England, largely, no doubt, owing to the influence of Robert de Betun, who had formerly been a Prior of Llanthony, and was at the time Bishop of Hereford. Communication was, however, kept up between the two houses, and during the reign of Henry II. periodical visits appear to have been made by the monks at Gloucester to their brethren on the banks of the Honddu. To what extent Llanthony *prima* was reduced at the time of the removal there seems no evidence to prove, but the bells are said to have been taken away in Roger de Norwich's time to Gloucester, and no doubt were destroyed in the fire chronicled by Walter de Froucester as having happened in 1301.

From this period until 1534, when Llanthony *prima* was dissolved, there is nothing bearing on its architectural history. At the Dissolution the abbey passed into the hands of Richard Arnold. At a later period Captain Arnold sold it to Auditor Harley, and through the Oxford family it came by purchase to Colonel Wood, of Brecon, and afterwards to Walter Savage Landor, whose descendant now owns the estate.‡

* The series of the "Abbeys of Great Britain" is continued this month with illustrations of Llanthony Abbey. For the list of Abbeys which have already appeared, and for particulars of future arrangements, see p. i.

† *Builder*, July 2, 1898.

‡ "Arch. Camb.," Ser. I., Vol. I.

If we cannot agree with the late Professor Freeman's opinion that "Tintern is nothing to Llanthony,"* there is doubtless much in Llanthony that renders it a particularly interesting study. Nothing could exceed the beauty of its mountain situation; and if the scale of the church is less than that of Tintern, the detail is, for its date, of equal interest, and helps to supplement the documentary evedence.

The present remains include the church, having a nave of eight bays, with aisles, and the bases of two western towers; the "crossing" with the base of a central "lantern"; aisleless transepts; and a presbytery, aisleless, but flanked by side chapels for two-thirds of its length. Of the monastic buildings the cloister court is fairly complete; the slype and chapter house on the east; the fragments of the frater on the south; and a large block of buildings on the west side, now used partly as an inn, partly as farmhouses, which includes many points of interest.

The church, although it bears evidence of advance in style from east to west, is practically Transitional Norman to Early English throughout. To this period likewise belongs the cellarage on the west and south sides of the cloister. The slype and chapter house are, on the other hand, fully developed Early English, and a trefoil-headed doorway has been inserted at the western end of the passage, south of the south-west tower. To the fourteenth century belong a vaulting shaft and other details in the chapel south of the presbytery; and the east window, according to old engravings, was also of this date, inserted in the earlier jambs.

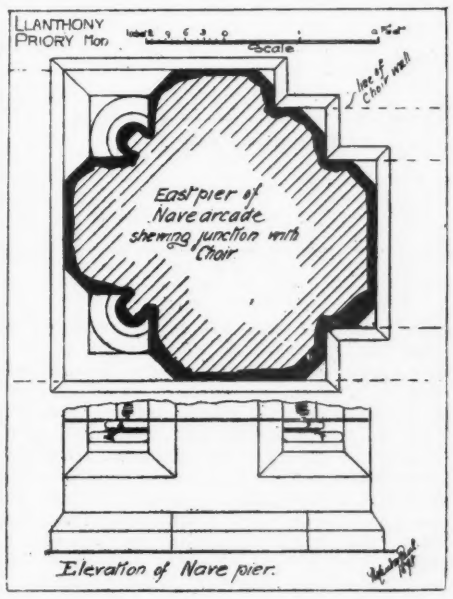
While it seems unaccountable that the building of so large a church should not have been recorded, it is obvious that no part of it can possibly be placed earlier than the middle of the twelfth century, and the nave and west front must, from their design, be given a still later date. Notwithstanding, therefore, that the monastery was reduced in 1136, during the remainder of the century building on a large scale must have been carried out, and the theory that Llanthony *prima* was "abandoned" for Llanthony *secunda* is negatived by the architectural evidence.

It is evident that the presbytery and transepts are the earliest parts of the church. The former was of three bays lighted by a single round-headed lancet in each bay (those in the two western bays being shorter on account of the roofs of the flanking chapels), and by a large window, perhaps a triplet, at the east end. This east window was flanked by two buttresses finishing, doubtless, in turrets. In the westernmost bay the walls are pierced on each side by a round-headed doorway forming both the upper entrances and the choir, and a communication with the side chapels. The presbytery was vaulted, and the vaulting shafts remain for a considerable height. Two steps still remain crossing the presbytery. The choir stalls occupied the space below the "lantern," and the ritual choir extended westward one bay into the nave. In the ground near the bases of the western piers of the lantern are still traces of foundations on which the stalls were placed, and there are indications of a step having crossed the church at this point. The lantern must, when perfect, have been very imposing. In old engravings it is shown rising two stories above the nave gable. The lower of these stories (now partly remaining) had round-headed arches. The upper story had windows with pointed heads, and the whole was finished with a corbel table and parapet. According to a letter from the then proprietor, Walter Savage Landor, "Llanthony Abbey was much injured while I was in Spain, in 1808, by taking down a part of the great tower contrary to my orders."† Two sides, the west and north, are now standing nearly to the ridge level of the nave and transept roofs, and there is a small part of the north side also remaining. The great arches supporting the tower are pointed and of two orders, chamfered. The inner order is in all cases carried on a corbel, and in the case of the eastern and western arches the outer order is likewise corbelled back to allow the stall work to be placed against the piers. Another curious feature is the treatment of the eastern arch of the nave arcade against the tower piers, and the corbelling back of the outer order.

The north transept is much ruined, but the south transept is nearly perfect. In the south wall are two round-headed lancets with a circle over them, and on the west side are remains of a single lancet. On the east side, near the south-east angle, is a round-headed recess, and the remaining part of this side is occupied by an opening into the south chapel spanned by a semi-circular arch. From the disproportion between the span of the arch and the scale of the corbels that carry it Mr. Freeman conjectured that the chapel had been originally planned with a central column, and that there had been two arches originally to the transept.* Of the north transept the north-east angle, with its buttress and a window jamb, remains, and a portion of its west wall with the base of a buttress. This has a sloping plinth as at the east and west ends. Both transepts were vaulted in two bays.

The large chapels on each side of the presbytery are much ruined. Only a fragment at the south-east angle remains of that on the north, with the vaulting shaft and springing of the vaulting itself. Of the south chapel, nearly half of its south wall remains. It has vaulting corbels at two levels in its south-west angle, and further east a vaulting corbel of Decorated date at the higher level. Near this is the jamb of a later window. This chapel evidently underwent alteration in the fourteenth century, the vaulting being raised, and some of the Transitional vaulting corbels re-used.

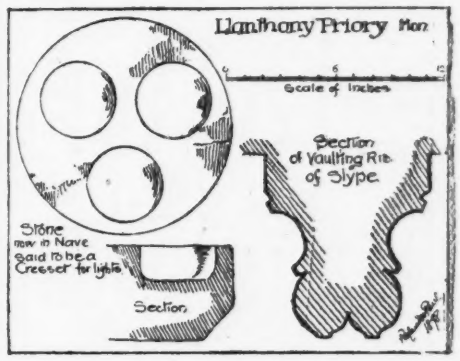
The nave was of eight bays, but the easternmost bay was, as already shown, a part of the ritual choir, and is, by alteration in the planning of the piers, one foot greater in breadth (see plan of nave piers). The next bay west was probably taken up by the pulpitum, thus leaving six bays for the ritual nave. The arcade had pointed arches, at first sight looking much later in date than they are, the arch and jamb mouldings being the same, without the introduction of caps. They are, in fact, piers, 4 ft. square, moulded at the angles, and resting on chamfered plinths (see plan and elevation of piers). The triforium and clearstory were united under one enclosing arch; the former had two pointed arches enclosed in a circular headed one, while the clearstory consisted, if we are to trust old engravings, of a round headed lancet in each bay. The bays are divided by vaulting shafts, with Transitional



caps, the shafts corbelled back below the string course that divides arcade and triforium. Freeman considers that, though undoubtedly prepared for vaulting, it was never completed, and that the nave was finished with a wooden roof of cradle form. Some marks against the west face of the lantern would seem to support this theory. The north arcade is perfect. The four centre arches of the south arcade fell on Ash Wednesday, 1837. Of the aisle walls only a fragment remains at each end. On the north side the return is visible on the west face of the transept, and a part of the lancet window remains in the westernmost bay adjoining the north-west tower. The remains on the south side are similar in extent, but the passage and conventual buildings over covered the aisle wall on this side. The west front of the church, as will be seen by the view, was a very fine composition, simple and dignified, with its transitional date clearly written on its design. Over the doorway was a triplet which fell in 1803, Sir R. Colt-Hoare being a witness of the disaster. It is shown roughly in old engravings, but nothing now remains except the outer jambs next the towers. The towers were, when perfect, at least one story higher than at present, and one of them was probably a bell tower. The bay of the north aisle adjoining the north-west tower retains part of its vaulting, and is the only instance throughout the church. At the north-west angle of the central "lantern" will be noticed a series of weatherings, and a portion of a string course on the west face of the transept. The relative positions of these features suggests either an alteration in the height of the side aisles, or an abandoning of the original idea when the aisle came to be constructed. There are altogether three weatherings, and a trace of a fourth below. The corresponding angle at the south-west is similarly treated.

On the north side of the choir, near the north-east pier of the "lantern," are the only fragments of monuments now left. They are here illustrated. The most perfect is a coffin-shaped slab, with a cross and other ornaments in low relief, of thirteenth century date. Of the same date is a fragment of another slab with the feet and leg of an effigy and foliage below, also in low relief. Both these are said to have been found in the Chapter House.** The third slab is of later date—late fourteenth century or early fifteenth—with a cross and a part of a marginal inscription in bold lettering. On either side of the shaft of the cross is a book and chalice.

Among the various fragments in the nave, is a circular stone, about a foot in diameter, with three cup-shaped hollows, said to have been used for lights. We give a measured sketch of this.


Llanthony Priory Mon
Scale of Inches
Section of Vaulting Rib of Slype
Stone now in Nave said to be a Creeset for lights
Section

The monastic buildings now claim attention. Immediately south of the transept is a slype or passage vaulted in three bays, the vaulting being carried on corbels. The entrance from the cloister is by a well-moulded arch with banded shafts, carved caps, and delicately-moulded bases. It is at this point that we find the first indication of a departure from Transitional detail. Everthing except the vaulting corbels (here, as elsewhere, probably re-used) is fully developed Early English work. South of this slype is the chapter-house, also of Early English date, three bays in length, with a semi-hexagonal apse, of slightly irregular form. The northern half of it is now a stable, the east end is a pig-stye. A portion of the bench that was continued round the interior remains at the south-east angle, but the whole of this beautiful building is in a sad state of neglect. Sufficient however remains for the general lines of its design to be recovered, and at its east end are still the foundations of one of the buttresses of the apse, which definitely settles its dimensions. The vaulting was carried on banded shafts in groups of three, and in each bay was a recessed lancet. The sills and jambs of at least one of these windows remain on the south side, and the window of slightly greater width on the south side of the apse also partly remains. The north side is now covered by the lean-to roof of the stable, but it has been completed on the ground plan. The jamb of one of the arches between the chapter-house and cloister remains on the south side. There were probably three, the centre one being the doorway. South of the chapter-house are the remains of another doorway, similar in design to that of the slype but having a greater span.

* "Arch. Camb.," Ser. III., Vol 1.
† "Arch Camb.," Ser. I, Vol. 1.

* "Arch. Camb.," Ser. III., Vol. 1.

** "Arch. Camb.," Ser. I., Vol. 1.

1
2.
Llanthony Priory, Mon.
Monumental Slabs now built in-to wall on Nth side of Choir.
12 Inches
Scale for No 3.
1/4 foot.
Scale for Nos 1 & 2.
R. Blomfield & Paul del. 1898

Following the south wall of the chapter-house at a distance of about 15 ft., are the traces of a wall, probably part of the base of a staircase. At this point the wall of the chapter-house is set back, and above are corbels for supporting a pentice. The angle buttress of the chapter-house eastward has also been corbelled back. At the present time a wall of uncertain date, part of a building of two stories, with a fireplace on the upper level, and a window on the lower level, abuts on the chapter house near the centre of the south side of the apse. There are remains of a small cross wall running westward, and the space between it and the chapter-house is filled with accumulated masonry and earth. South of this building is said to have been a "splendid sewer." This, though not at present visible, no doubt still exists, and probably had an outlet towards the river Honddu, south-west of the monastery.

On the west side of the cloister is a group of buildings chiefly of post-Reformation date, now partly an inn and partly a farmhouse. A recent careful examination, however, has proved that part stands on the old cellarium, and the continuation of it occupied what is now an open courtyard. It was divided into two alleys by a series of square piers, with chamfered angles, and it has been traced, as will be seen by the ground plan, for a length of six bays south. On the east side of the seventh bay is a fireplace with the hearth still *in situ*, and assuming that the fireplace was central, this bay would have been slightly larger than the others, and the piers would have come on the line of the present wall. Everything south of this has been destroyed by the modern approach. The first three bays at the north end are perfect with their simple cross-barrel vaulting. At a higher level and adjoining the south-west tower is a passage, also with a cross-barrel vault. At the west end is a richly moulded trefoil-headed doorway, at the east end a plainer one with a segmental head; both Early English additions to the Transitional work. Two houses—formerly a residence, now a farm—project westward of the old line of the cellarium. They are of comparatively modern date, but may probably stand on the site of monastic buildings. There are some traces of old walls on the north face, and a plinth on the south.

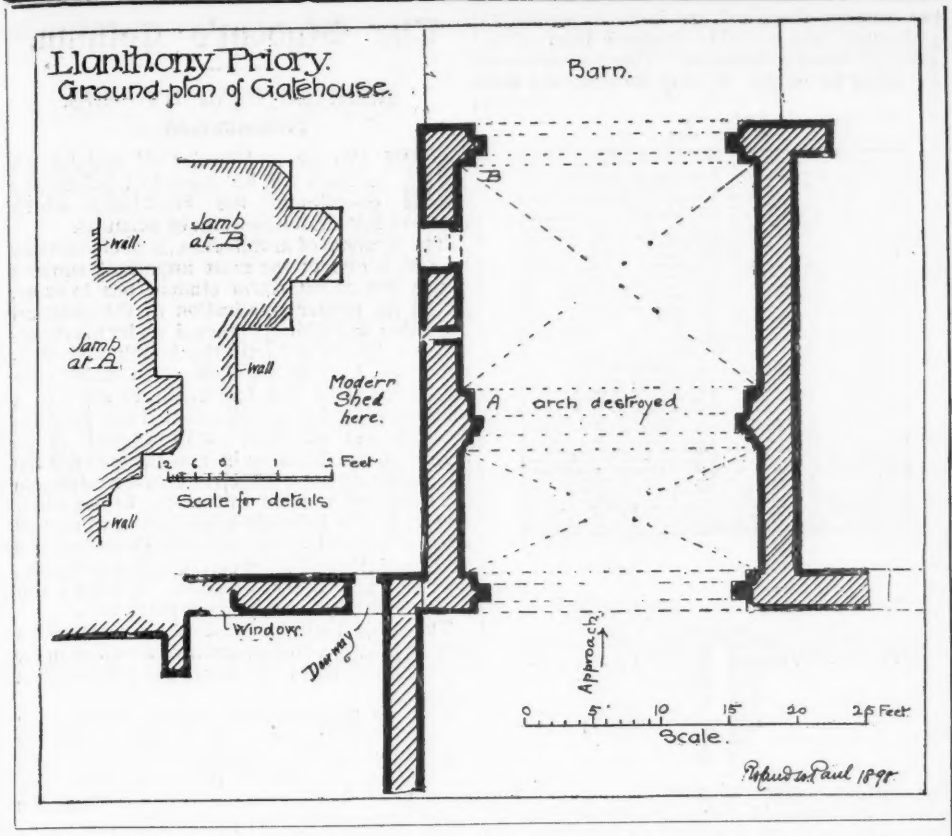
On the south side of the cloister a wall, 3 ft. 9 in. in width, is all that remains of the frater. There were doorways at both ends of this wall, and on its south side are the remains of the cellarage. There are traces of a cross wall near its western end, and indications of a fireplace at the back of the cellarium wall, near the fireplace already noted. The frater was not quite parallel with the church, its main axis inclines slightly south-east.

At a little distance south is the parish church of St. David, recently restored, and generally considered to mark the site, if it does not actually retain the walls, of the infirmary hall and chapel. It is placed at a greater angle with the monastic church than the frater, and near its south-west angle are other buildings which bear evidences of having at one time formed part of the monastic buildings.

About 150 yards west of the cellarium is the great gateway of the Priory. We give a plan of this, as well as the view of its southern front, which stands at the head of this article. It is probably of early fourteenth century date, and is a further evidence of the flourishing state of the priory at that period. It is of two bays, the southern one having formed a porch or shelter. It was divided from the northern half by a large and small arch, and on the left or west side was the entrance to the porter's lodge. The north elevation seems to have resembled the south. There are three arches, the two outer ones pierced and cusped, in the south gable, and at both angles are traces of walls of buildings now gone. A little distance further west is a part of the boundary wall. The fish ponds appear to have been south of the priory.

The arms of Llanthony *secunda*, perhaps also used by Llanthony *prima*, have hitherto been incorrectly given. They were: Party per pale *az.* and *gu.* on a chev. betw. three sprays of oak. *arg.* a rose betw. two pinks proper.

Llanthony is at all times a fascinating spot; perhaps at no time does the broad mass of its western front and central tower stand out better against the dark background of mountains than in the late afternoon light. It is this effect that we have attempted to give in the general view from the north-west.



Owing to its secluded situation it must be classed with the less-frequented of our monastic ruins, and owes much of its charm to its solitary surroundings; but the buildings require careful attention, and the chapter-house should be cleared of the accumulated dirt and outbuildings that now destroy its beauty.

Two papers in *Archæologia Cambrensis*, referred to in the foregoing account of the ruins, give perhaps the two best accounts of the building and its history hitherto published. The first is by Rev. Geo. Roberts, vol. I, Series I.; the second, an account of the architectural details of the church, by the late Prof. E. A. Freeman, in Series III., vol. I, pp. 82-109.

We believe that hitherto no authentic plan of the monastery has been published. The one now given will, therefore, have additional value.

BUILDING ACTIVITY AT BERLIN, 1898.

ANY one who has not visited Berlin for a couple of years, will be struck by the change in the appearance of its thoroughfares. Everywhere, in the heart of the city, as well as in the smallest suburb, the activity in the building trade has been phenomenal; and innumerable houses of as recent date as the "seventies" have had to make room for new structures erected almost regardless of expense in the best of materials. Whole blocks have been rebuilt, and even certain districts of the fashionable Thiergarten area are being pulled down to make room for the elaborate residences which are taking the place of the old-fashioned villa with its neo-Greek stucco front, so long one of the characteristic features of the German capital. In main thoroughfares the change is no doubt most marked, for there the aspect of some hundreds of yards of frontage at a time will often be found altered.

As far as the architect is concerned there is also a marked improvement in the design of the Berlin façade. The academic fronts with their commonplace classical detail are disappearing, and the more modern schools of design are making themselves felt. Herr Griesebach, whose work we have frequently illustrated, originally set the example, and has many followers; whilst the pupils of Professor Wallot may be said to form another school of their own. Even the more academic architects of an older generation, such as Professor Messel, and Messrs. Cremer and Wolfenstein, show that they have recognised that something different was required of them than they had at first anticipated when they started variations on Italian and German Renaissance. As is the case wherever there is a new movement, the extremist reformer, such as Herr Sehring, is, of course, also not missing. But it is not only in the design of the exterior that progress is being made at Berlin; there is certainly also a marked improvement in every department of building that calls for comment and encouragement. Even in plan and in sanitation there is a great advance as compared with what was done some few years ago.

As regards public works in hand during the past year, the new offices and Council Chamber of the Prussian Diet have just been opened, whilst the great Cathedral is nearing its completion, having just been roofed in, and the Royal stables, opposite the Castle, are just having the scaffold removed. Then again, in nearly every part of Berlin we find churches that have either just been finished or are nearing completion; whilst a large number of minor Government offices have arrived at that stage in which their opening can be counted on in so many months. Curiously, as far as public buildings are concerned in the capital, the only department in which there seems to be some stagnation is that of the Municipal Buildings Board, and of all the proposed improvements in the architectural rendering of the municipal offices, about which so much has been written since Mr. Ludwig Hoffman was appointed City Architect, we have not yet been able to see a single suitable example that might serve as a basis for opinion. As a word of warning we would however note that if, as we understand, the Italian Renaissance is to be introduced for the future covered market, board school, and other municipal structures, this style will be just as out of place in modern Berlin as the coarse brickwork façades of his predecessor were in the building epoch of the "eighties."

Among the semi-public buildings, such as hotels, banks, assembly rooms, and the like, a considerable amount of interesting work is to be found; and the bank buildings in particular are becoming an important feature in the main thoroughfares. As to the hotels, however, perhaps the interior arrangement calls for more remark than the façade; thus, in equipment, the new Bristol Hotel is far in advance of what is to be found elsewhere on the Continent. The luxurious character of the fittings is a conspicuous feature in the modern semi-public buildings at Berlin.

Next, if we turn to the shops, such an establishment as that of Messrs. Wertheimer, designed by Professor Messel, is, perhaps, one of the most instructive buildings in Berlin, for it embodies most markedly our modern requirements of air, light, and roominess in such institutions, and though it would be impossible to give a structure so much window opening in London, owing to the requirements of our Building Act, those who frame our future Building Regulations will have to bear in mind that it is the skeleton structure that will have to be considered in the future, as far as shop property is concerned. It would, however, lead too far in these notes, to go into detail regarding the shops as found in Berlin, and we would only add that great trouble seems to be everywhere taken to obtain artistic effects in the interior, so that the commonplace shop with its long rows of counters is becoming a thing of the past.

Speaking of the villa district referred to above, there seems to be a predilection for laying out large plots for groups of from six to twelve villas, with a private thoroughfare as their approach. It is also interesting to observe that a good deal of money seems to have been spent on wrought-iron work, for the railing and gate have become a most important feature in property of this description. A villa residence costing less than 20,000*l.* in this district is the exception.

Turning to various other recent building operations at Berlin, we may notice that the various sheds and houses in the large Zoological Gardens have been most picturesquely reconstructed, and that many of the public places are being laid out and improved and further decorated with sculpture of some considerable merit. On the Victory Avenue a particularly fine series of statuary, for instance, has been promised by the Emperor, and some of the monuments are already in position, the idea being to represent the Rulers of Prussia and the leading men of their times.

Turning to the more utilitarian public works, it is interesting to note that very great improvement is being shown in the architectural treatment of the bridges over the River Spree and the various canals, but there is more taste shown in the erection of new embankments, railings, and the like. Even the new overhead railway, which is in course of erection, has its artistic merits, and certainly everything is being done to prevent its becoming the eyesore which it is in New York.

As regards the maintenance of the thoroughfares and public parks, we can only speak in praise, for Berlin is certainly becoming the best-paved city on the Continent, as it has long been the cleanest. What with its excellent electric trams, its neat Victoria and Coupé cabs (in which taxometers have been introduced), and the brilliant lighting either by electricity or by incandescent gas lamps, locomotion in the German capital is becoming quite a pleasure; and if the police only understood traffic regulations as we do in the Metropolis, a Berlin thoroughfare might serve as a model to the world.

Taken altogether, Berlin has, during 1898, again upheld its position as being the one city in which the most advanced ideas, as far as building and public works are concerned, are practically put to the test regardless of expense; and where the municipality and the freeholder rival one another in their efforts to improve the appearance of its streets. The result will be that, in another ten years Berlin will be a model city in spite of its position, and of the financial embarrassment soon after the Franco-German War. It is already a wonderful monument of industry, system, and prosperity, combined with "Baulust," *i.e.*, the love for bricks and mortar.

LUXFER PRISMS.

THE installation erected by the British Luxfer Prism Syndicate, Limited, at 16, Hill-street, Finsbury, is well worth a visit, if only to see what can be done in the way of rendering dark interiors much lighter, by a very simple and economical process. The Syndicate cannot, of course, create light, but it has succeeded in bringing forward a most ingenious method for bending light rays by refraction, so that these latter shall be projected to any dark corner or part of a room remote from a window. We happened to go to the place on a very dull day, which was hardly fair to the prisms, but showed at any rate what they could do under adverse circumstances, and the result was highly satisfactory; in fact, it was just on such a day as the prisms would have been most useful in actual practice. There is a long room about 90 ft. in depth lighted only at one end by the Luxfer prisms. The latter being mounted in a frame fixed as a folding window could be brought into play as desired. Opposite the window was a building, the top of which was of such a height that, with the width of the street about half the ordinary horizontal diffused light was cut off. In other words, a line drawn from the parapet of the building diagonally across the street to the ground line in front of the window, made

an angle in the latter position of about 55 deg with the vertical wall in which the window was placed. Without the aid of the Luxfer prism window the long room was lighted only near the opening to the street, and that for only a few yards. In such a position the light rays fell on to the floor near the window orifice. When the prism window was shut, however, these light rays, instead of falling on the floor, and thus being badly reflected and mostly absorbed, were caught and refracted horizontally to the far end of the room, lighting it sufficiently to enable one to read where before it would have been quite impossible to do so.

In another room the sparse light from a well, between glazed brick walls, was caught, and refracted at the most convenient angle, so that an interior which must have been almost dark (on the day we visited) was rendered sufficiently light for general purposes without artificial light of any kind. Yet a third room had a refracting window (shall we call it?) which was equally serviceable; and at another end of the room a number of experiments were conducted to show the varying effects of different varieties of the prism. By arranging the prisms diagonally, light was thrown from either one side of the room or the other as desired. But perhaps the most striking experiment here was the lighting of a stained glass window. In the ordinary light this window was exceedingly dull, and did not bring out the colours of the glass in at all a satisfactory manner. By inserting a band of the prisms, however, that portion of the window was illuminated in such a manner as to greatly improve its appearance, the light being caught from the outside and projected through the window, did not in any way interfere with or cast shadows upon the stained glass itself.

In the basement of the building much larger Luxfer prisms are arranged in the street pavement, so as to send refracted light into the interior, and the effect is intensified by the adoption at the same time of smaller prisms, in window form, which catch the rays refracted through the pavement prisms and direct them to such positions as may be required.

In regard to the prisms themselves, they are of quite an ordinary form and are manufactured in great variety, so far as size and angle are concerned. For window purposes and similar objects, each "prism" consists of a small plate of "crystal glass," one side of which is smooth, as in ordinary plate glass, whilst the other side is fashioned into a number of prisms running parallel with each other—that is in the commoner forms. The angle which the two projecting sides of each of these prisms makes with the base of that prism (*i.e.*, parallel with the outside smooth surface) varies with the angle at which the window is to receive the light rays, and divers angles are arranged for varying forms of window canopies, &c. The principle is the same throughout, however. It will thus be seen that each small plate (not more than a few inches square) is, although called a "prism," composed of a number of prisms. Each prism does no more than refract a great portion of the light rays falling upon the surface presented to them.

In addition to their power of refracting, these windows are noteworthy on account of their strength and peculiar construction. They are made of a number of small squares of thick crystal glass as already described; but the squares are not fitted together by means of thick lead or iron glazing, which cut off so much light. With a view to minimising the number of rays which must be cut off, the little squares are joined together by copper. This will be made clear on referring to figs. 1 and 2. A copper strip about $\frac{1}{32}$ in. in thickness (see fig. 2 where the strip is greatly magnified) is placed between the edges of two of the glass plates to be united, or a compound arrangement for uniting four plates may be understood from fig. 1. The plates being gripped together, the whole is placed in an electrolytic bath, by means of which copper is deposited in a thin strip along the edge of each of the thin copper strips already adverted to, and thus firmly holds the small plates together (see fig. 1.) In fig. 2, for the sake of clearness, we have shown the thin copper strip as being away from the sides of the glass; in reality the strip is pressed close to them. The strips are so thin that even in the finished state they cut but little of the light off from the windows or canopies as a whole. The windows made in the manner described are quite as strong as plate-glass, and probably stronger than plate-glass of similar thickness. There is no room for them to bulge. It may be observed that

Fig. 1.

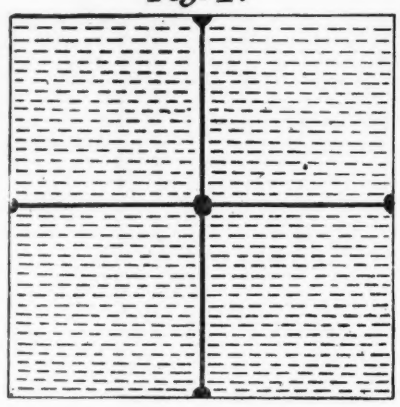
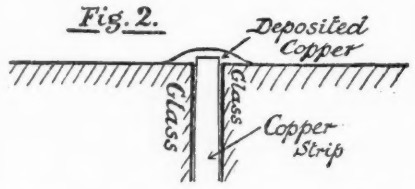


Fig. 2.



the smooth surface of the prism plates are placed outwards in fixing an installation, so that there is not much trouble in cleaning, &c. In regard to basement lighting, the multi-prisms let into the pavement are provided with small secondary prisms which receive the light rays coming sideways down and up the street, and render them available by compound refraction, which may probably not amount to much extra light in the aggregate. Apart from the small lateral prisms alluded to, the big lenses employed save a great amount of light, and we are quite satisfied with the net result.

Finally, we think that the Luxfer prism method of lighting partially dark rooms in daylight is a good one; by using small and parallel prisms the light is more diffused than by the employment of a series of large prisms. The principal difficulty is to catch the available light rays at the proper angle to get maximum and collective refraction, and from what we have seen we believe the Luxfer Prism Syndicate has successfully coped with this.

Correspondence.

To the Editor of THE BUILDER.

THE DECORATIONS AT ST. PAUL'S.

SIR,—I am heartily glad to see that some one has "broken the ice" with an adverse criticism on the new decoration at St. Paul's which appears in a letter in the *Builder*. I cannot think that there are merely a few architects (whose opinion on decoration taken into regard with the building as a whole should be most worthy of respect) who disapprove of what is going on inside that noble fane. The character, I contend, of the decoration is wholly out of keeping with Renaissance architecture, and one might imagine the ghost of Wren erasing the famous motto on his tomb could he behold the false face which is being put on his masterpiece. Sir W. B. Richmond has started from an entire misconception in his treatment of the building. Everything is done to kill surface—a thing of all others to be preserved; all breadth is gone, and a style of decoration has been executed in a Byzantine character rather than Renaissance. I cannot but think a day will come when it will be perceived that a deplorable mistake has been made.

ANOTHER ARCHITECT.

BOOKS RECEIVED.

THE RENAISSANCE IN ITALIAN ART. By Selwyn Brinton. Part II. (Simpkin, Marshall, & Co.).

THE "CLEOPATRA" SWIMMING BATH.—We learn that the swimming bath which was moored for some years past against Victoria Embankment, near the Charing Cross railway-bridge, has been bought, failing other purchasers, by a ship-breaker for 300*l*. The bath, having cost, it is said, nearly 23,000*l*., was removed in 1894 to the pier at Southend, and refitted as the "Palace Bath," but did not, it seems, prove to be a successful venture.

The Student's Column.

ARCHITECTURAL HYGIENE.

INTRODUCTORY.

IN the present series of articles an attempt will be made to tabulate and co-ordinate the knowledge which exists in this most important of sciences.

The hygiene of architecture, it need scarcely be said, is one of the most important subjects which the architectural student has to study, for on its proper application in the practical execution of buildings erected under his supervision depends not only the health and well-being of his clients, but often their very existence. It is not too much to say that a building placed on a well-selected site, properly drained and executed with regard to its planning, and fitted up in accordance with the latest sanitary knowledge, reduces to a minimum the need for medical intrusion. In no other service is the intimate connexion of cause and effect so painfully apparent; a badly constructed system of drainage is a certain cause of typhus, typhoid, and other diseases. It affects the health of the inmates in every particular.

The subject will be presented in as simple a way as possible, and an endeavour will be made to include all that is necessary for the architect to know.

At present the literature on the subject is in a most chaotic state. There are ponderous tomes on particular branches, which are quite beyond the province of the practitioner, and there is no one treatise which combines the essential knowledge for practical use.

The subject will be dealt with under the following divisions:—

I. Sanitary Legislation.
II. The Site and Foundations.
III. The Plan in regard to Health and Convenience.
IV. Sanitary Construction.
V. House Drainage.
VI. Drain Ventilation, including Syphonage and Traps.
VII. Sanitary Fittings.
VIII. Disposal of Sewage.
IX. Water Supply and Pollution.
X. Ventilation.
XI. Heating.
XII. Lighting.
XIII. Sanitary Inspection.

I. *Sanitary Legislation.*—Many Acts of Parliament contain clauses which refer to sanitation, and an endless array of authorities exist whose by-laws are to be followed. An attempt is made, therefore, to bring the more important provisions before the student in a simple manner, so that the principal regulations referring to sanitation can be seen at a glance.

II. *The Site and Foundations.*—The sites of buildings and proper provision for draining are then taken—a most important subject, and one which is often neglected.

III. *The Plan in Regard to Health and Convenience.*—Then follows the planning of the house in regard to health and convenience.

IV. *Sanitary Construction.*—The various materials in use in buildings, their special points and value, and their effective use in roofs, floors, and walls are dealt with in this section. Special reference will be made to the exclusion of damp from walls, and the various methods in use in ordinary practice.

V. *House Drainage.*—House drainage includes the laying of underground drains, the use of gulleys, the comparative value of earthenware and iron pipes, and special points to be observed in the laying of drains so as to prevent blocking up. The inspection of drains by manholes will be also described and illustrated.

VI. *Drain Ventilation, &c.*—The important subject of drain ventilation and the prevention of syphonage in traps will be dealt with, including their various forms.

VII. *Sanitary Fittings.*—Next an article on sanitary fittings and traps which illustrates the different forms of closets and their traps, lavatories and their wastes, grease traps, baths, and water waste preventers, &c., and the general use in buildings of all these fittings.

VIII. *Disposal of Sewage.*—Having thus planned the system of drainage we have to consider the important question of the disposal of sewage, including refuse collection, and to compare conservancy systems and water-carried systems, and the treatment of sewage. We shall supply some typical drainage plans of executed works, so that the student will have

before him practical object lessons in the subject.

IX. *Water Supply and Pollution.*—Then the important question of water supply and its pollution is undertaken, the effect of rainfall on a district, the advantages of a constant and intermittent supply, the question of storage, filtering, and water fittings in general use.

X. *Ventilation.*—This includes the composition of air, the movement of air currents, the quantity of air required per person, and the impurities to be found in air. The best position for inlets and outlets in ventilation systems, and the division of the subject into natural and artificial systems. Examples of ventilation schemes as applied to domestic and public buildings are also given with plans.

XI. *Heating.*—Under the section of Heating the comparative advantages of hot water in the high and low pressure systems, and of steam are discussed, and the general arrangement and form of heating apparatus. The subjects of ventilation, heating, and lighting are, of course, very much connected, and should be considered together.

XII. *Lighting* is treated in conjunction with ventilation, but in this section the various kinds of illuminants are dealt with from a hygienic point of view.

XIII. *Sanitary Inspection.*—This section will be devoted to sanitary surveys and reports, a subject well within the ordinary practitioner's domain, and one by means of which the young architect may often tide over the early struggles of a professional career with profit to himself and friends. A model specification for the sanitary work of an ordinary small house is outlined, in which are incorporated the facts which have been laid down in the previous articles.

The importance of the above-mentioned subjects is fully recognised by the examinations which are held on it by the Royal Institute of British Architects, the Surveyors' Institution, the Institution of Municipal and County Engineers, the Sanitary Institute, and the Carpenters' Company, &c. It also forms part of the examination for the Diploma of Public Health held by the various Universities throughout the British Empire, so that these articles should appeal to a wide circle of readers.

Sanitary science is the bridge or link connecting the architectural and medical professions, and on it are to be found both architects and medical men. We need not discuss here to whom the work of making new buildings healthy and habitable in a hygienic sense really belongs, for it must be apparent that the architect should be solely responsible for it. He cannot delegate to anybody so important a branch of his work, neither should he desire to. Architectural practice is interesting because of its variety, and while the architect may to-day be superintending the laying of drain-pipes and the formation of manholes, to-morrow he may be designing an altar frontal or a bishop's mitre.

While the architect should reserve to himself, as the *chief workman*, the planning and superintendence of everything connected with his buildings, he should, on the other hand, be ready to accept for inquiry the views of medical men on those subjects with which they are more familiar, and to make inquiries in an enlightened manner into all new ideas and inventions in regard to sanitation.

In sanitary science there is no lagging behind, no stopping on the forward march. In no other science that we know have such strides been made during the Victorian era. From Sir Edwin Chadwick onwards the progress has been uninterrupted, and in these articles an attempt is made to bring into one coherent treatise the whole subject as affecting architects whose privilege it is not only to superintend and re-plan the existing drainage of old buildings, but to see that in the structures which they erect the principles of hygiene may be carried out with as much success as the knowledge on the subject permits.

NEW WORKHOUSE CHAPEL, SALISBURY.—The recently-erected chapel at the Workhouse was opened and dedicated by the Bishop of Salisbury recently. The building was commenced in March last by Messrs. Kite & Son, of Fisherton, and was erected to the plans of Mr. George Gordon, architect. It is Gothic in character and is composed of brick, with courses of grey brick round the windows and elsewhere. In the nave there are six lancet windows, and in the chancel two and an east window. It has a woodblock floor, and the seats are of pitch pine, and are capable of seating 150. The building is warmed on Grundy's hot air system.

GENERAL BUILDING NEWS.

REOPENING OF SHERNBOURNE CHURCH.—The Church of SS. Peter and Paul, Shernbourne, was reopened recently after restoration. During the restoration of the old walls, and in the process of excavations being made, the foundations of the original aisle and chancel were discovered, and these indications have inspired the lines on which the work has been conducted, the church now consisting of nave, chancel, south aisle, and porch. Although the walls have been partially rebuilt, such judicious use has been made of the old material (flint and rubble) as to redeem them from the appearance of raw newness almost inseparable from such work, while the retention of the ancient stonework in doorways, windows, and arcading considerably enhances the appearance of age. Externally the roofs to nave and chancel are covered with Broseley tiles, a stone cross surmounting the east gable and a bell turret the western. The roofs to south aisle and porch are covered with lead. Internally the chancel has a wagon-headed roof in oak, treated with moulded ribs and carved bosses, those to nave and south aisle being of a plainer character. The piers to the south arcade (of the Decorated period), after being walled in for centuries, again divide the nave from the south aisle, the eastern end of which is intended for the future organ chamber, an ancient doorway giving access to the chancel. The floors of nave and aisle are of wood blocks, the sacrarium and chancel being laid with tiles and stone steps. The pulpit (on stone base) and the choir stalls are in oak; and the font has been refixed on a stone slab. The only remaining brass, together with the Purbeck marble slab to which it is attached, has been restored and refixed in an upright position in the north wall of chancel. All the memorial mural tablets have been retained. The windows throughout are glazed with cathedral glass. The heating apparatus is by Messrs. Mackenzie & Moncur. The lamps have been supplied by Messrs. Ames, Lyde, Elsum, & Co. Among the contractors entrusted with the execution of the work have been Mr. Geo. Riches, of Dersingham, who restored the fabric of the building; Mr. John Boddy, of Harpley, being responsible for the roofs, floors, and internal fittings; and Mr. A. W. Hall, of Norwich, who restored and reinstated the ancient stonework, together with the new masonry throughout. Sir Arthur Blomfield has acted as consulting architect, and the work has been carried out from the designs and under the superintendence of Mr. Herbert Green, of Norwich.—*Eastern Daily Press.*

NEW CHURCH FOR BOOSBECK.—It has become necessary to build a church to meet the requirements of the Boosbeck district of the Parish of Skelton-in-Cleveland. Plans have been prepared by Mr. Hicks, Diocesan Architect, of Newcastle, for a stone church, to seat 400, at an estimated cost of 3,000*l.*, exclusive of the site.

CHURCH, FALKIRK.—St. James's United Presbyterian Church is about to be erected in Falkirk, at the corner of Thornhill-road and the new street at Firs. The building, of which Mr. G. Deas Page, Falkirk, is architect, will cost 4,000*l.* In the Gothic style, it is being constructed of red stone from Locharbriggs Quarry, Dumfries.

CHURCH IMPROVEMENTS ON THE BORDERS.—The old Parish Church of Eckford, situated on the banks of the Teviot, near Kalemouth, which has been closed since May last, in order to allow of internal alteration and improvement, has been reopened. The scheme of restoration embraced the reseating of the church, the removal of the east gallery, and the forming of a chancel at that end, the insertion of a new window in the east gable, the introduction of a modern system of heating, a new pulpit and communion table. The architects were Messrs. Sidney Mitchell & Wilson, Edinburgh.

WORK AT THE TOWER, EARL SOHAM CHURCH.—The Church bells in the parish of Earl Soham have been rehung A new frame, with modern improvements, has been set up, a new ringing chamber erected, and the tower strengthened. The spiral stairway has also been repaired, the old gallery removed, and a screen put up that has been made out of the materials of the tower arch. By the removal of the gallery, the tower arch and the Perpendicular west window have been opened out. The architect, Mr. T. G. Jackson, R.A., has reproduced in the screen many of the features of the old gallery worthy of preservation. The work of rehanging the bells has been carried out by Messrs. George Day & Son, Eye; and the design of the screen has been reproduced by Mr. C. Beecroft, Earl Soham.

AISLE, &C., CASTLE CHURCH, STAFFORD.—On the 23rd ult. the Bishop of Lichfield dedicated a memorial aisle and windows, which have been added to the Castle Church in memory of the late vicars. The new aisle has been added to the north side of the church, and will accommodate about eighty worshippers. The memorial stained-glass windows in the wall of the new aisle have been presented by Mr. W. G. Bagnall. The apostles, Matthew, Mark, Luke, and John, are represented in them. The architect is Mr. J. Oldrid Scott, London, and the work has been carried out by Mr. Bridgeman, of Lichfield.

EAST SIDE CONGREGATIONAL MISSION HALL, WHITBY.—The new East Side Mission Hall, situate in Grape-lane, Whitby, was opened recently. The ground floor consists of one large room, which will be utilised for Sunday school and assembling purposes; whilst the classes of larger children are provided with six separate class-rooms of varying sizes. In the basement there is a heating chamber, lavatories, &c. The building is faced with red brick and stone dressings. Mr. J. C. Petch, of Scarborough, was the architect for the building, and the various departments of work have been carried out by the following: Brick, stone, slating, plastering, and ironwork, Mr. A. Palframan; joinering, Mr. B. Smith; and plumbing, Mr. E. Smithson.

WESLEYAN METHODIST CHURCH, BOLE HILL, SHEFFIELD.—At the recent quarterly meeting of the Carver-street Wesleyan Methodist circuit, the chairman reported that at a recent meeting of the Bole Hill Chapel trustees plans drawn by Mr. W. J. Hale, architect, were submitted and approved for the erection, on the site already acquired at Bole Hill, of a new chapel with vestry and school accommodation, at an outlay of about 4,000*l.* The scheme comprises a chapel to seat some 300 persons, with entrance porches, and a chancel in which will be placed seats for the choir and the communion table and rail; a school-room for 320 children, which has separate entrances for boys and girls; and vestries of varying sizes, together with kitchen and other accommodation.

SCHOOL, RAVENINGHAM, EAST ANGLIA.—At Raveningham a voluntary school with a teachers house has been erected. The new school occupies a central position, and is a red-brick building with a red-tiled roof. Mr. A. Pells, of Beccles, is the architect, and Messrs. J. Hipperson & Sons, of Barford, the builders.

COTTAGE HOSPITAL AT RHONDDA.—It has been decided to erect a cottage hospital at Llwynypia, Rhondda, in the mining district of Glamorganshire; it is intended chiefly for accident cases from the collieries. Messrs. Griffiths & Jones, of Tonypandy and Llandaff, have been instructed to prepare the plans, &c.

BUILDING IN ABERDEEN IN 1898.—During the past year building has been very active in Aberdeen, while the prospects for next year are exceptionally bright. Large numbers of big blocks of tenement houses (with shops) have been and are being erected at Torry on the south side of the River Dee. A great many dwelling-houses have also been built in other suburbs, and building is brisk along the lines of railway from Aberdeen. In the more central parts of the city numerous new buildings have taken the place of old structures. Among the most important public buildings completed in 1898 are—Empire Palace Theatre; Corporation Lodging-house; South Wing, Marischal College; enlargement of Corporation Baths (large swimming-pond and new wing); and extension of Sick Children's Hospital. A strike of plasterers dislocated business for a time, and the strike and lock-out at the granite quarries (involving the suspension of all the operative masons for a time) interfered seriously with the supply of grey granite, and it may be noted that red granite is now considerably used for house building in Aberdeen.

THE BUILDING TRADE AT BARNSLEY.—From the annual return made by Mr. J. H. Taylor, C.E., Borough Surveyor, it appears that the year 1898 has been very quiet compared with its predecessors. Seventy-seven plans were deposited, embracing 158 houses, ten shops, three public buildings, seven workshops, &c., and three for alterations, &c., making a total of 201, which is the lowest since 1887, when the total was 137. The total number of buildings erected and certified has been 158, against 263 in 1897.

BELFAST BUILDING TRADE.—Although there has not been much falling off, still the improvement in the building trade in 1897 was not as fully maintained last year. Bricks have been by no means as scarce as in previous years, as the supply has been quite equal to, if not more than equal to, the demand. This applies principally to stock bricks, and not to perforated bricks, as large quantities of the former are used in the building of artisans' dwellings, and this particular branch of the trade has fallen off very considerably during the past few months, owing doubtless to the very large number of houses which were built on the extended municipal area about the time this was taken over by the Corporation. The supply of this class of house has been greater than the demand. Taking everything into consideration, we consider that the building trade has been very satisfactory during the year, with the one exception referred to, and it is to be hoped that early this year that branch of the trade also will revive.—*Northern Whig.*

BUILDING IN BOLTON.—Like its predecessor, the year just closed has been marked by considerable activity in connexion with building operations in Bolton and the adjoining districts. Including the completion of undertakings commenced prior to the advent of 1898 and the work still in hand by Bolton architects and contractors, the number of structural extensions and renovations has been considerable, and also show much variety, the spreading being not only in the direction of industrial and commercial development, but in that of religious and educational progress; while new warehouses, shop, and dwelling-house construction has continued to be carried out on an extensive scale. There has, however, been comparatively little new mill-building in the borough.

BUILDING AND STONE TRADES, BRADFORD.—The local building trade has been exceedingly brisk throughout the year. Some of the more prominent buildings erected, or in course of erection, are the shop premises in Manningham-lane, the Empire Theatre of Varieties, the Telephone Company's offices in Nelson-street, the alterations and additions to the Parish Church, shop properties in Westgate, and a large warehouse in Canal-road. In the neighbourhood of Shipley building on a very extensive scale has been carried on for the textile trade. The speculative house-builder has been never busier in Bradford than during this year. The stone trade has been good, both as to the local and as to the Metropolitan and provincial markets, and prices have advanced since 1897. The timber trade has been very active, and the increase in cottage property has been considerable.

BUILDING IN BRISTOL IN 1898.—There has been a fair amount of activity in Bristol in the erection of new buildings during the past year. It is a matter for satisfaction, says the *Western Daily Press*, that Bristol is extending its manufactories, so that if it is not breaking new ground, it is increasing its power of output in existing industries. House building has gone ahead in many districts, particularly in Bedminster, St. George, Westbury, and Bishopston. The tendency is to produce a much more convenient and better fitted class of house than formerly, and hence it is not surprising that many of the older residences, minus bathrooms and other modern necessities, have suffered in competition with the newer villas. The improvement of Wine-street has made considerable progress, and several new shops have been erected, the fronts being set back so as to widen that thoroughfare. Closely connected with these changes is the demolition of a considerable part of that interesting, if not very inviting, old street, the Pithay. Every year leaves Bristol with fewer of the quaint overhanging houses which helped to carry the imagination back to the days of our forefathers. Several large blocks have been erected in Baldwin-street, and the frontages to that important artery of traffic are now nearly complete. But for the heavy rate imposed in October it is quite possible that a site for new municipal buildings would have been decided upon, but the matter has been referred back to the committee for further consideration, and meantime further expenditure upon the Council House site has been sanctioned.

BUILDING IN COVENTRY.—Builders in Coventry have been busy in the last twelve months. Although the number of plans approved was not so large as in 1897 there were considerably more buildings completed, the numbers being: 1898, 655; 1897, 508. More houses were finished last year than in any previous twelve months—the increase being no less than 102—compared with 1897, which hitherto had furnished the largest total. Builders have plenty of work in hand, and the demand for houses still continues.

DUNDEE BUILDING TRADE IN 1898.—The prosperity of a city finds fair indication in the state of its building trade, and at the present time, judging by the briskness in this department of industry, Dundee would appear to be in a prosperous condition. The year has been marked by an almost phenomenal activity in the building trade, and this in spite of the fears expressed a year or two ago that the boom had largely spent itself, and that a reaction must come. At the beginning of the year there was an enormous amount of work on hand, and as the spring wore on additional contracts were entered into, and the result has been that all branches of the building trade have been kept fully employed. Indeed, difficulty was experienced at times in getting qualified men, and in many cases new properties were not ready at the stipulated day. The feature of the year's building operations in Dundee has been the extraordinary increase in the number of tenement dwelling-houses erected—a state of matters which can only be described as a revival of the boom of several years ago in this class of property. In 1895 there were complaints that numerous three and four roomed houses were standing empty, and that occupiers of such dwellings were finding their way to suburban districts; now it seems as if too many tenements could not be erected, while the demand for such is certainly most pronounced. These tenements have for the most part been put up in the eastern and northern districts, although the other parts of the city have not been neglected in this respect.—*Dundee Advertiser.*

EDINBURGH BUILDING TRADE.—In the building trades masons, joiners, plasterers, slaters, plumbers, &c., have all been fully employed during the past year. From first to last the weather has been of an open character, and outdoor work was very little interrupted. A large amount of what may be called speculative building has gone on during the year, especially at Dalry, Morningside, and Murrayfield. At Dalry, in consequence of the growth of manufacturing establishments in the west end of the city, there has been a great demand for workingmen's houses, and many tenements to meet this want have been erected. These houses for the most part consist of two rooms and kitchen and three rooms and kitchen, and rent from 12*l.* to 20*l.* In Murrayfield and Morningside villas mostly have been built, not a few of them, on the Cluny property, being of a substantial character. Important buildings for insurance companies have been in progress in St. Andrew-square and George-street; the building of the North British Railway Hotel has afforded employment to a considerable number of men, and outside of Edinburgh there has been in progress a large extension of the Rosslynlee Asylum. In the first part of the contract of the Caledonian Railway Leith line, which is in the hands of Messrs. W. Beattie & Sons, Fountainbridge, there has been a large amount of masonry, in the form of viaducts, &c., constructed, and in connexion with this, and with the construction of the North British Leith line, for which Messrs. James Young & Sons have the contract, a large number both of skilled artisans and unskilled labourers have been required. The demolition of property to make way especially for the North British new Station at the foot of Leith Walk has necessitated the railway building, as it is provided for under the displacement clause of their Act, a number of houses for working people who have been disturbed by their operations. These tenements have been erected in Lorne-street and Halmyre-street, half of them by Messrs. Beattie and half by Messrs. Young—accommodation being thus provided for nearly 300 families. There has been also abundance of work for unskilled labour in connexion with the demolition of the houses of the North Bridge, the excavating of the foundations for the new *Scotsman* offices, and, all over the town on the streets with the cabling of the tramways. Plumbers and gasfitters have had a busy year in putting electric wires and fittings into houses. They would have done more had this department of work not received a check by the inability of the Electric Light Committee to guarantee a supply of electricity to newly-wired houses. That, however, will be shortly remedied.

THE BUILDING TRADE, GLASGOW.—The various trades connected with the building industry in Glasgow have all been well employed throughout the year. The relations between employers and their employés have been friendly. The valuation of the linings granted by Glasgow Dean of Guild Court during the year is the highest of any year since 1876. The past seven years have each in succession shown a marked increase from its predecessor in the value of linings granted by that Court. But indications are not wanting at present of the probability that the zenith has been reached for the present of the erection of dwelling-house property at least. For the past three years the value of linings granted for dwelling-house property has exceeded in amount the value of the linings granted for buildings for all other purposes together, whereas for the previous three years the value of the linings granted for buildings for other purposes was more than double in amount of value that granted for dwelling-houses. The preparations being made for the erection of buildings for various purposes in the central parts of the city will for a time counteract any slackening of the building operations in the suburbs. The extensive railway works in progress and in contemplation must also cause an amount of displacement of the occupiers of both dwelling-house property and business premises.

BUILDING IN INVERNESS.—The year 1898 has been a progressive one in the town of Inverness. Although the actual number of new buildings erected in the town was not so large as compared with the previous year, still all classes of workmen were kept constantly employed throughout the year. The villa boom, which was characteristic of the year 1897, has now reached its highest, and the feature of 1898 has been the enterprise of private parties in erecting large blocks of workmen's dwellings.

THE BUILDING TRADE IN LEEDS.—Though the previous twelve months were marked by very great activity in the building trade, the year now closed has been even brisker, while the present year is likely to rival it. But rosy as the outlook may be, the masters would have that mere outsider, the general public, to understand that this activity may lead people to erroneous conclusions if they are not at the same time told that both labour and material are, or very likely to be, considerably dearer than they have been. First as to labour—the bricklayers have given notice that they shall require a penny per hour more than the ninepence they are now receiving. Then as to material, the advance in prices has been greater than for twenty-one years—and it has been an advance all round; cement, for instance, has risen during the year to the extent of ten shillings per ton. The masters admit, of course, that changes of this kind are not peculiar to the building trade, but they also urge that this year they occupy a position practically, but not altogether pleasantly, unique, so marked has been the upward tendency of prices. The widening of Vicar-lane and the consequent re-construction of Kirkgate Market will be the biggest job in the near future, entailing, as it will, the re-building of a very large quantity of private property. The erection of large schools is shortly to be commenced on the south side of the river, and one is to be built close to Woodhouse-lane; while there is also to be erected a Masonic Temple on a fairly large scale. The extension of the Griffin Hotel is one of the largest schemes in the way of alteration of premises. What may be described as clearance work is actively proceeding in many parts of the city, though as yet little rebuilding has been done. On all hands there is every reason to anticipate a long period of activity.—*Leeds Mercury.*

BUILDING IN MONTROSE.—Not for twenty years has the building trade in Montrose been so busy as during the past year. Several improvements have been effected in certain localities by altering old buildings, but the boom has shown more than anything else that a felt want in the absence of a certain class of dwellings in the community has been recognised, and will soon be met.

BUILDING IN NEWCASTLE-ON-TYNE.—During the year that has just closed, building operations have been carried on with increasing rapidity wherever possible. There are three ways in which this activity has been principally apparent. The first is the pulling down and rebuilding of old premises that have served their turn and must give way to new. The second, and most important, is the building of houses for the growing population to live in. And the third is the erection of the great public buildings—churches, and schools, and the like—which are needed more and more as the population extends outwards. Grainger-street, Grey-street, Clayton-street, and Market-street are unalterable as to their main structures; but at many of the shops, by the insertion of new windows and the alterations in the interior, the aspect of things has changed materially. In Blackett-street, old brick buildings have been demolished, and their places taken by lofty stone structures, and the same thing has gone on in Percy-street and Northumberland-street. In Collingwood-street, the larger part of one side has been razed to the ground, and the builders are busy in the erection of new premises. At Gallowgate, where the roadway was widened by the removal of the Corporation Baths, a handsome building is being erected; and at the top of Westgate Hill, where the old inn used to be, there is, or is about to be, the initiation of new work. In Neville-street, right opposite to the Central Station, a site is now being covered by hotel buildings. To those living in the outskirts of the city, the activity has been most apparent in the laying out of new streets. In every possible direction that has gone on with astonishing rapidity. To the westward, all the ground, nearly, has been built upon, right up to the city's limits. Southward, of course, further extension is barred by the river. Newcastle has gained considerably during the past year in the way of public buildings, and there, again, the prospect for the coming year is good.—*Newcastle Chronicle.*

BUILDING TRADE IN NORTHAMPTON. — The building trade in Northampton last year was not conspicuous for its briskness or prosperity. In fact, the closing months have been months of slackness, and one cannot help coming to the conclusion that, so far as cottage property is concerned, Northampton is now well supplied for a year or two, or until the increase in population demands more house room; or until some new industry looms upon us and transforms the industrial aspect of the town. However, progress has been made, and there have been some good buildings erected or opened during the year.—*Northampton Reporter.*

BUILDING IN NOTTINGHAM.—For the twelve months ending with November, plans for 955 new dwelling-houses, to be built within the city limits, were passed by the Council, most of these being for the erection of working class dwellings. Altogether more than 1,000 plans came before the Building Committee, 324 being rejected. Building operations in that portion of the Meadows which abuts on the Great Central line are working a partial transformation in that locality. Large blocks of cottages, some of which are for the employés of the company, are rapidly approaching completion, and a block of school buildings, which will be known as the Mundella Schools, is already within measurable distance of completion. At Lenton there have not been quite so many houses built as was the case last year, but at Sneinton the work of putting up new property has proceeded briskly. Between Sneinton Dale and Colwick-road a number of new streets have been laid out. In various parts of the town a good class of residential property has been erected, mainly for the middle and working classes; and there have been a great many alterations in the south part of the city, particularly in that quarter where the new line passes towards Trent Bridge. At Bulwell a new boulevard has been constructed. The most prominent building erected during the past year was the new post-office in Queen-street. During the year the foundations of the new workhouse, which is to take the place of the one cleared away by the Great Central Railway Company, and which is to cost 200,000*l.*, have been put in, and are now complete. The superstructure is to be proceeded with immediately. The governors of the General Hospital having decided to build a new wing to the hospital, the excavations are now being made. Additional facilities for providing the public with popular entertainments have been afforded by the construction of the Empire Theatre of Varieties.

BUILDING IN SHEFFIELD.—The building of house property has been going on apace in Sheffield during the past year or two, and the year 1898 establishes a record, says the *Sheffield Independent*, both as regards the number of new houses certified for occupation and the number for which plans have been submitted to the Corporation and approved. The building department of the City Surveyor's office has been continuously and unusually busy

throughout the year—one of the busiest, in fact, of the several busy bureaus under Mr. Wike's supervision. Between November 9, 1897, and November 9, 1898, 2,020 houses were certified as fit for occupation within the city boundaries. The total for the previous year was 1,426, so that the advance is considerable; and the comparison is more remarkable still when the average for the ten preceding years is taken into account. That average works out to 848, and it thus appears that the rate of house-building in Sheffield has been just about doubled during the past two years. Another way of estimating the activity of local builders is to take the number of plans for new property submitted to the Corporation for approval. This figure differs considerably from the one already given, affording rather a criterion of what next year's developments in brick and mortar will be. During the past municipal year, it seems, no less than 1,073 plans were deposited in the City Surveyor's office, of which 985 were approved, the others being disapproved or withdrawn. The number of new houses sanctioned in these plans is 3,518, and as only a part of them have been actually erected, this unmistakably points to continued rapidity in the growth of the city. Like the number of houses sanctioned, it is a considerable advance on the total for the preceding twelve months. At the last meeting of the sub-committee which has the plans to deal with, proposals were submitted for 390 new houses in different parts of the city. It is not only in the erection of house property that the building speculator has been at work. During 1897-8, 306 buildings of different kinds, other than houses, have been completed and written off by the municipal authority as satisfactory. In the same category, 484 buildings have been sanctioned during the year. Eight certificates as to means of egress from public buildings have been issued from the City Surveyor's department during the same period. There have been deposited with the department during the year 62 street plans for new streets and sewers, of which 52 have been approved, representing a total length of streets and sewers of 16,913 lineal yards, or nearly ten miles. In almost all the suburbs of Sheffield, new property is springing up fast, but perhaps Abbeydale, Darnell, Firvale, and Hunter's Bar take the lead. Round about Ecclesall-road especially vacant sites are fast disappearing, and the district is losing its rural aspect. The past year has not been marked by the erection of many big buildings, but architecturally speaking the city continues to improve.

PROPOSED PAVILION AT KNIGHTSTONE, WESTON-SUPER-MARE.—An inquiry was held on the 27th ult., at the Town Hall, before Mr. H. B. Boulnois, *M. Inst.* C.E. (an inspector of the Local Government Board), respecting applications by the Weston-super-Mare Urban District Council, for sanction to the borrowing of (1) 14,300*l.* for a pavilion at Knightstone (Mr. J. S. Stewart, of London, being the architect for the pavilion); (2) 1,482*l.* for the extension of baths at Knightstone (Messrs. Price & Wilde, architects); and (3) 431*l.* for purposes of public offices.

PROPOSED WORKHOUSE, HUNSLET, LEEDS.—It is proposed to erect a new workhouse at Rothwell Haigh, Hunslet. The plans prepared by Mr. J. H. Morton, architect, South Shields, have been adopted.

FRIENDS' HALL AND INSTITUTE, HIGHGATE, BIRMINGHAM.—At a cost of about 40,000*l.* a Friends' Hall and Institute has been erected on a site opposite the Moseley-road Board School. On either side of the porch entrance is a glass-covered verandah. On the left side of the front entrance hall (there are other entrances in Oughton-place, to which thoroughfare the building extends) is a room which it is proposed to set out as a coffee-house, and the corresponding room on the other side is to be arranged as a reading-room. Proceeding along the mosaic-paved corridor the main hall is reached, and leading from this are the secretary's office, the caretaker's apartments, and a number of rooms for the accommodation of the various classes. Over the reading and coffee rooms, extending the whole length of the building, is the small lecture hall, and at the back of the building is the large hall, which will seat 2,000 people. It is so arranged with revolving shutters that around the sides of the hall, under and over the galleries, which are supported by ornamental pillars, a series of class-rooms—thirty-seven in all—may in a few minutes be fixed up. A gymnasium has been provided in the basement. The building has been erected by Mr. John Bowen, from the plans of Messrs. Ewen and Alfred Harper, architects.

BUILDING IN LEEDS.—Another big batch of plans came before the Building Plans Sub-Committee of the Leeds Corporation Improvements Committee on the 9th ult. A considerable proportion of them relate to alterations and improvements to existing property in the central parts of the city. The old bank premises of Messrs. Wm. Williams Brown & Co., for instance, are to be overhauled and converted into showrooms and offices adapted to the character of the business usually done in Commercial-street, and the rear portion reconstructed as warehouses. Another scheme concerns improvements to St. George's Church—the addition of an apse, the building of new vestries, and so forth; and there are also projects for the extension of works. The total number of plans considered was 120, comprising 316 dwelling-houses in different districts of the city.—*Yorkshire Post.*

CLUB, READING.—New club buildings were opened recently for the Wellington Club. Part of the old site has been utilised, with extensions to the north, and the main frontage is now in the Station-road, instead of to Friar-street, as before, the corner of the same elevation being occupied by the new premises of the Metropolitan Bank, Limited. In the basement of the new club premises are large kitchen, &c., servants' hall, and the usual domestic offices, and cellarage. On the ground floor are large main entrance-hall and cyclists' entrance (with cycle house), each having a lobby for coats and hats; two billiard rooms, a reading-room with bay window, smoking-room, smoking lounge, card-room, lavatories, &c., and a half-covered court for American bowls. The staircase leading to the first floor is of teak and walnut; the floor is devoted to a dining-room with bay window, with an annexe for private tables, connected by a lift and separate service staircase, and other rooms, including the Secretary's office. The service-lift and staircase also connect with the private dining-room on the second floor. On this floor are also various rooms to be let as bedrooms to members, a bath-room, and lavatory accommodation. Various rooms for the private use of the steward, and a sitting-room and bedrooms for the staff, occupy the third floor. On two of the landings the light is reflected through memorial windows. The club and bank buildings are alike built of the best selected red brick and buff terra-cotta, the entrances being massive and of polished granite of various tints. The joint architects were Mr. F. W. Albury and Mr. George W. Webb, both of Reading; and the contractors, Messrs. G. S. Lewis & Bro., Reading.

VICTORIA HOSPITAL, RICHMOND, YORKSHIRE.—The work of building the new Victoria Hospital for Richmond and district is approaching completion. The architects are Messrs. Clark & Moscrop, Darlington. The new hospital building is built of local stone, and has red Staffordshire tiled roofing, the front facing south. It is a one-storied structure.

BANK BUILDINGS, ROTHERHAM.—The York City and County Banking Company have erected on a site in Moorgate-street, Rotherham, a branch bank. Grey Aberdeen granite has been used up to the first floor level, from which point there is brickwork, with stone dressings. The bank itself measures 30 ft. by 24 ft. 6 in., and is 15 ft. high. There is a suite of offices—six in number—immediately above. On the top floor are caretaker's apartments. Messrs. Demain & Brierley, of York, have been the architects, and Messrs. Wm. Ives & Co., of Shipley, the contractors.

PROPOSED POORHOUSE INFIRMARY, SOUTHAMPTON.—It is proposed to erect a poorhouse infirmary on the Shirley Warren site, for the Southampton Board of Guardians. The architect is Mr. A. F. Gutteridge (Messrs. Mitchell, Son, & Gutteridge).

ELECTRIC LIGHT STATION, LEITH.—In the electric light station, Junction-street, Leith, Provost Bennet recently turned on the Leith Walk section of the electric light in Leith. Mr. Bryson is the Electrical Engineer. The buildings are erected on the town's property in Junction-street, and have been built with a view to future extension. The boiler-house is about 50 ft. in width, by about 70 ft. from back to front. The remainder of the ground for additional boiler space has not been roofed in, and it is proposed to use the same for coal storage. The engine-room contains at present five steam dynamos, equivalent to 700 h.-p., and there is accommodation for three other dynamos, by which the horse-power can be increased to 2,000. The total cost of the installation was estimated at fully 28,000*l.*—distributing mains, 8,000*l.*; electric lighting station buildings, 8,000*l.*; engines, dynamos, and accessories, 8,844*l.*; boilers and accessories, 3,313*l.*; and 8-ton travelling crane, 240*l.*; and the actual cost is less than 30,000*l.* The contract for the engines, dynamos, and accessories was carried out by the Indiarubber, Guttapercha, and Telegraph Works Company, Limited, Silvertown; for boilers and accessories by Mr. George Sinclair, Leith; and for 8-ton travelling crane, by Messrs. Carrick & Ritchie. The architect for the building was Mr. George Simpson.

NEW HOTEL FOR ABERDEEN.—In a short time a commencement will be made with the erection of a new hotel in Guild-street, Aberdeen, at a point almost directly opposite what will be the main entrance to the extended Joint Station. The new building will have a frontage of 60 ft. to Guild-street. The plans are now being prepared by Mr. R. G. Wilson, architect. The new hotel will be five stories high from the ground level.

TOWN HALL, CONWAY.—The Town Hall which has been built at Conway has just been opened. The building replaces the old market, the materials of which have been largely utilised. On the basement there are council and committee rooms, with offices for the borough officials. The upper floor is devoted to a concert and assembly hall, with retiring and waiting rooms, and which has a separate approach from the street. The original plans were designed by Mr. T. B. Farrington, C.E., the Borough Surveyor, but since his illness the works have been superintended by Mr. Richard Davies, architect, Bangor. Messrs. E. Thorpe & Son, Llandudno, were the contractors, the approximate cost being 4,000*l.*

STAINED GLASS AND DECORATION.

WINDOW, HOLY TRINITY CHURCH, BATLEY CARR.—The east window and the side chancel window of this church are to be filled with stained glass, the gift of Mr. and Mrs. Fox, of Staincliffe. The work is to be executed by Messrs. Powell Brothers, of Leeds, whose designs have been selected in competition with those of other firms.

WINDOW, OLD MEETING CHURCH, BIRMINGHAM.—A new south window has been erected in the Birmingham Old Meeting Church, Bristol-street, to the memory of William Sextus Harding and Anne his wife. The window is the work of Messrs. Heaton, Butler, & Bayne.

DECORATION OF ST. PAUL'S, GOSWELL-ROAD, E.C.—This church, built by the late Ewan Christian, was on the 20th ult. reopened after cleaning and decorating. Over the altar has been painted a large picture of the Lord's Supper. The west end over the font is enriched by paintings of Our Lord, and adoring angels on either side. Between the spandrils on the north and south side are paintings of the Four Evangelists, and dividing the chancel from the nave are life-size figures of Saints Peter and Barnabas under canopies. The walls of the whole interior have been diapered, and the roof of the chancel has been diapered with gold. The whole work was carried out by Messrs. Percy Bacon & Bros., under the supervision of Mr. Romaine Walker.

MEMORIAL WINDOW IN MOFFAT PARISH CHURCH—A large memorial window in memory of the late Mr. Walter Johnstone, of Bodesbeck, has been placed in Moffat Parish Church. The window is composed of three lights, and represents our Lord walking with two of his disciples on the way to Emmaus. The window was designed and executed by Messrs. Ballantine & Gardiner, Edinburgh.

WINDOW, GERMAN CHURCH, BRADFORD.—A stained glass window has just been placed in this church. It has been presented by Mr. Tye, of Bradford, and is illustrative of the text, "Honour thy Father and thy Mother." The window has been designed and executed by Messrs. Powell Brothers, of Leeds.

MEMORIAL BRASS TO SIR F. LOCKWOOD AT ST. MARGARET'S, WESTMINSTER.—A memorial to the late Sir Frank Lockwood has been placed in this church, in the form of a brass with a border elaborately engraved and bearing an inscription. The work was executed by Messrs. Percy Bacon Bros.

MEMORIAL WINDOW FOR ST. PAUL'S EPISCOPAL CHURCH, EDINBURGH.—St. Paul's Church, York-place, Edinburgh, has just been embellished by the insertion of another stained-glass window at the north-west end. The subject illustrates the text from Revelations, "Blessed are they that do his commandments that they may have the right to the tree of life and enter through the gates into the city." The artists were Messrs. A. Ballantine & Gardiner, Edinburgh.

WINDOW, ARKSEY CHURCH, DONCASTER.—On the 29th ult. a stained-glass window, placed at the east end of the church at Arksey, Doncaster, by Lady Cooke, of Wheatley, in memory of the late Sir William R. C. Cooke, was dedicated. The window is in three lights, and the subjects are, in the centre, the Crucifixion, on one side St. Mary, and on the other side St. John. The work has been executed by Messrs. Heaton, Butler, & Bayne, London.

NEW WINDOW, SUNBURY-ON-THAMES.—On Christmas Eve, a stained glass window was dedicated at the Parish Church, Sunbury-on-Thames, as a memorial to the late Rev. Henry Vigne, who had been vicar of the parish for upwards of fifty years. The window, which is on the north side of the nave, was carried out by Messrs. Joseph Chater & Sons, of London, from the designs of Mr. G. Ostrehan.

FOREIGN.

FRANCE.—The excavations undertaken in the Ile de la Cité by the "Vieux Paris" Committee, in search of the remains of the Roman wall, have resulted in the discovery of the substructures of the ancient Archbishop's palace, as well as an important fragment of the ramparts of the city. This, like the other portions discovered in 1829 and 1847 in various positions in the neighbourhood of Nôtre Dame, is about 2½ mètres thick, and composed of large blocks which seem to have been taken from buildings that had been pulled down. Tiles of Roman make have also been found.——The inhabitants of the Parc Monçeau quarter at Paris have signed a memorial desiring that the monument to Puvis de Chavannes should be erected in the centre of the Place Pereire, contrary to the wish of the painter's friends, who wish it to be placed in the Jardin de l'Infante at the Louvre, near the monument to Meissonier.——The Carnavalet Museum has acquired a carved corner-post from an old house at the junction of Rue Saint Denis and Rue des Prêcheurs, carved as a Tree of Jesse. These corner-posts are rare and curious examples of decorative woodwork of the fifteenth century. There are examples of the

same class at Chartres, Reims, Sens, Orléans, Beauvais, and Rouen.——The drawings by Puvis de Chavannes presented to the Municipality of Paris number 163, and are to be exhibited at the Galliera Museum.——Advantage has been taken of a number of repairs going on at the Tribunal de Commerce to destroy or conceal all the monograms recalling that the building had been erected under the Second Empire; an absurd piece of vandalism which the "Vieux Paris" committee ought to have endeavoured at least to prevent.——A new reservoir is being formed at Saint Cloud to receive the waters of the Avre, at a cost of more than a million and a half francs.——The equestrian statue of Napoléon, by M. Fremiet, is to be erected at the entrance to the arsenals at Grenoble. The statue was formerly in the Place d'Armes at Grenoble, but was overturned in 1871.——The decease is announced, in Paris, of M. Sellerier, architect, at the age of forty-seven years.

PUBLIC WORKS AT HAMBURG.—With the completion of the new town hall, and the various new public offices, the architectural activity, as far as public buildings are concerned, is somewhat on the decrease; but, on the other hand, Hamburg is looking towards a period of great activity in the civil engineering department. The long-discussed railway works, with the large central station, will now probably at last be taken in hand. The principles for remodelling the railway system around Hamburg have practically been determined, the officials of the Imperial Government on the one side, and those of the Hamburg State on the other, having come to a compromise which should be satisfactory to all parties. The present lamentable state of the railway stations has long been a disgrace to the city, and the sooner they are re-modelled, the better. In the Harbour, again, various material extensions are to be expected, as the rapid increase of traffic and commerce has to be catered for. Several important quays are to be taken in hand, together with four large blocks of warehouses, an extensive series of sheds, and a new Customs house. As far as the architectural rendering of the buildings is concerned, the Hanoverian brickwork, which has been utilised throughout the Harbour works, is to be maintained, but in respect to the construction various important innovations are to be expected.

THEATRE BUILDING IN GERMANY.—Germany is at present showing considerable activity in theatre building, and no less than four important cities (*i.e.*, Cologne, Frankfort, Kiel, and Nuremberg) are about to build new Municipal playhouses. At Frankfort, the old Municipal comedy house is to be replaced by a modern building, and thus this town will soon have both a new home for opera and for drama. About 75,000*l.* is to be spent on the new building, of which Herr Seeling will be the architect. Some 15,000*l.* has been voluntarily subscribed; the rest of the cost will be met by the civic authorities. At Cologne, the new theatre is to serve both for opera and drama, and its design is at present the subject of a limited competition. At Nuremberg, the theatre is to be built in conjunction with some Municipal assembly rooms, whilst at Kiel a building of only secondary importance is desired. A number of the older playhouses in Germany are also being remodelled, and, in many instances, new stages are being put in. Thus, for instance, a new stage has just been completed at Carlsruhe to meet he requirements of Mr. Mottl's Wagner Cycles, and another is to be put in at Manheim. By a curious anomaly, the Royal Opera House, Berlin, however, still remains one of the worst planned and equipped theatres in the Empire, and seeing that the Emperor takes such an active interest in the operatic performances, it is somewhat surprising that a new building has not yet been commenced during the ten years of his reign.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Percy W. Meredith, architect, has removed from 20, Deerbrooke-road, Herne-hill, to 21, Finsbury-pavement, E.C.——Messrs. Newton & Cheatle, architects, have removed to new offices at 39, New-hall-street, Birmingham.——Messrs. Moses Eadon & Sons (President Steel Works, Sheffield) have removed their London office from Bishopsgate House to 5 and 6, Bishopsgate-street Without, E.C.——Messrs. Donnison, Berlyn, Sillem, & Co., general electrical engineers, have removed their North of England branch offices to 66, South John-street, Liverpool.——Mr. Perry F. Nursey, consulting engineer, has removed his offices from 161, Fleet-street to 17, Victoria-street, Westminster.——Mr. H. E. Milner, landscape gardener, 7, Victoria-street, Westminster, has taken into partnership his son, Mr. E. B. Milner.

LABOUR MARKET IN THE COLONIES.—The January Circular of the Emigrants' Information Office states that in New South Wales matters relating to trade, labour, and industry are improving, but the effects of long drought, and of serious disputes between capital and labour, have made employment in many cases precarious. The building trade remains depressed, and there is a large number of empty houses in Sydney and the suburbs. In the metal trades at Sydney there is no demand for any kind of mechanic. In Victoria, a skilled mechanic, who lands with sufficient money to provide for himself and family during the first few weeks, would have a reasonable prospect of finding remunerative employment, especially in country districts. A few more plumbers and glaziers—if duly qualified—would find employment on the drainage works which are now being carried out at Melbourne. But for ordinary labourers employment continues to be scarce. In South Australia a Government Labour Bureau has just been established for the purpose of facilitating the obtaining of employment. The Bureau is situated in Victoria-square, Adelaide, and branches may be established elsewhere; a register is to be kept of all persons applying for employment, but no one can be registered unless he has resided for one year in the colony; a register of employers applying for labour is also to be kept. No labour is to be employed in the public service except through the Bureau. The Report of the Queensland Government Labour Bureau for 1897, which has just been issued, does not point to any very satisfactory results, but on the whole the tendency of the labour market was towards improvement. In Western Australia a considerable number of public works are being carried out in all parts of the colony, but as many of these are nearly completed the Government will during the next few months gradually discharge some 200 of the employees in the Public Works Department. In Tasmania good miners and mechanics can always get work, but there is no demand for inexperienced men. Extensive smelters are being put up at Zeehan, and brickfields have recently been opened. In other parts of the colony there is no general demand for more mechanics. In New Zealand, in the district of Auckland, the building and sawmill trades have been very busy. In other parts of the colony also, except at Wellington, men in the building trades have been fully employed; the engineering trades have also been busy, except at Auckland and Oamaru. Ordinary labourers find plenty of work in country districts at this season of the year; but they must avoid large towns like Auckland, Wellington, Christchurch, Timaru, and Dunedin, where many hands have been unable to find employment. In Cape Colony and Natal there is very little demand for mechanics or labourers at the present time. In the South African Republic (Transvaal) there is great scarcity of work in the building and other trades, and a great number of mechanics have left to look for employment elsewhere. At Beira, in Portuguese East Africa, a considerable amount of distress prevails, and persons are warned against going there in search of work.

GLASGOW ARCHÆOLOGICAL SOCIETY AND KELVINGROVE HOUSE.—A circular has been sent out by this Society bringing under public notice a resolution passed at a meeting of the Council of the Society, and expressing a hope that the removal of this relic of old Glasgow will be opposed. The text of the resolution is:—"That the society deprecates the removal of Kelvingrove House, which deserves preservation, not only as an example of the architecture of Robert Adam, but as for over a century one of the best known and most picturesque landmarks of Glasgow, and an excellent example within the city bounds of a country mansion of the old Glasgow gentry."

THE BUILDING BY-LAWS, FOLESHILL, COVENTRY.—At a meeting of the Foleshill Rural District Council, recently, a letter was read from Mr. F. Warner, for the Coventry and District Master Builders', Plumbers', and Painters' Association, stating that the Association had carefully considered the by-laws in force in Foleshill, and were of opinion that several needed slight amendment. He asked if the Council would consent to receive a deputation from the Association.—Mr. T. F. Tickner, in pursuance of notice, moved that the Council appoint a committee to consider the by-laws with a view to ascertaining which, if any, ought to be amended or relaxed. He said in several respects the Foleshill by-laws were more stringent than in Urban Districts, and he did not think this should be the case. One which pressed very heavily was that requiring cement concrete to be spread over the site whether needed or not. The Coventry city by-laws provided that it should only be spread where the dampness rendered it necessary. Then, he did not think there was another place in the United Kingdom besides Foleshill where hollow walls were prohibited. Again, the Foleshill by-laws did not admit of half-timbered buildings being erected. He was of opinion that there was no style more picturesque for rural buildings than the half-timbered.—Captain Bellasis agreed with Mr. Tickner except with regard to the concrete, which he thought was absolutely necessary. The Chairman remarked that the Surveyor had stated that the Council had never objected to half-timbered houses. Colonel Woollcombe-Adams asked if there was a by-law to prevent buildings being erected with hollow walls, composed of two 4ft. 0in. courses with a space between, and the Surveyor replied in the affirmative, and said it was quite right too, for there was not the strength in such walls as in solid. Mr. T. Gossage seconded Mr. Tickner's resolution, which was carried by six votes to four.—*Coventry Herald.*

THE REGISTRATION OF PLUMBERS.—The Registration Committee were entertained by the Master, Wardens, and Court of the Plumbers' Company to dinner on Thursday last week. Amongst those present were:—Dr. Allan, Medical Officer of Health to the Strand Board of Works; Dr. Priestley, Medical Officer of Health to the Lambeth Vestry; Mr. T. de Courcy Meade, City Surveyor, Manchester; Dr. Mansel-Howe, and representatives of the London Society of Associated Master Plumbers, and the various London Lodges of the United Operative Plumbers Association of Great Britain and Ireland. Mr. de Courcy Meade, in proposing the toast of "The Registration Committee," said there was no doubt that the work of the Committee in connexion with the National Registration of Plumbers was being more and more felt throughout the Kingdom, and he particularly referred to this being the case in Lancashire, where, in his capacity as City Surveyor of Manchester, it came repeatedly and forcibly under his notice.—Mr. F. Randall, speaking on behalf of the Operative Plumbers, referred to their desire to secure the highest standard of plumbers' work, and their appreciation of the support rendered generally to the Registration movement, particularly by prominent medical and architectural authorities. He expressed the hope that a scheme of apprenticeship for plumbers in London would be established as quickly as possible, and that the classes for plumbers should be open only to bonâ-fide apprentices.—Dr. Allan, in stating that a great deal of plumbers' work necessarily came under his notice, expressed his opinion that a great improvement was noticeable within the last few years, and he had no hesitation in saying that such improvement was mainly due to the Registration movement.

"BEEHIVE BRAND" GLASS.—This is a second quality of glass produced by the Red Star Glass Works Co., and which is announced as a cheaper substitute, where desired, for the Red Star glass.

APPOINTMENTS.—At the ordinary meeting of the Lambeth Board of Guardians at the offices, Brook-street, Kennington, recently, the Works Committee unanimously recommended, and it was agreed, that Mr. S. R J. Smith, of York-buildings, Adelphi, be appointed architect to the Board.——The Halifax Waterworks Committee have resolved to recommend the Town Council to appoint Messrs. G. H. Hill & Sons, of Manchester, engineers, for the construction of the proposed new reservoirs at Walshaw Dean. The Committee also recommend that during the construction of the works an additional salary at the rate of 200*l.* a year be paid to Mr. J. A. Parkin, the Halifax Waterworks engineer.

A DISCLAIMER.—We are requested to state that Major Hector Tulloch, C.B. (retired Royal Engineers and lately Chief Engineering Inspector of the Local Government Board) is not the person who was a director of the West Australian Trading Syndicate, two of the directors of which are under prosecution by the Public Prosecutor.

BIRMINGHAM ARCHITECTS AND THE EXTENSION OF THE COUNCIL HOUSE.—The members of the Birmingham Architectural Association have forwarded to the Lord Mayor the following resolution: "Having read the Press report of the recommendations of the General Purposes Committee to the City Council, respecting the proposed new art-gallery and public offices, the Council of the Birmingham Architectural Association have had under consideration the suggestions therein contained respecting the appointment of an architect or architects to carry out the works. They regret that the proposals seem to imply that the resolution of the City Council, and passed at the suggestion of this Association, directing that works to cost upwards of 10,000*l.* shall be submitted to architectural competition, is to be departed from; and they beg respectfully to request that the subject shall receive the most careful consideration before being acted upon. Should, however, it be determined to dispense with competition, they venture to hope that, as the proposed new buildings will occupy so prominent a position, and be used for public as well as artistic purposes, the greatest care will be exercised in the selection of an architect, who, from his experience and works, may be trusted to produce a building which will not only be thoroughly suitable and convenient in its plan and arrangement, but will also be of decided architectural merit and an artistic ornament to the city."

NEWPORT MASTER BUILDERS' ASSOCIATION.—The annual banquet in connexion with the Newport (Mon.) Master Builders' Association was held at the King's Head Hotel, on Friday, the 16th ult. Councillor J. Linton, the President, was in the chair. Mr. A. S. Morgan gave "Architects and Engineers," and Mr. Edgar Fawckner, (Messrs. Habershon & Fawckner), responding for the architects, said the feeling between builders and architects was one of mutual respect and esteem. Mr. Bain (Messrs. Swash & Bain) and Mr. R. H. Haynes, engineer under the Corporation of Newport, also responded. Mr. S. T. Harse introduced the principal toast, "The Building Trade." Mr. W. M. Blackburn, responding, remarked upon the different manner in which architects treated them as compared with bygone times. Mr. Jones, also responding, said he believed their work was of an enduring character, and a good deal of it would remain after they had passed away. Mr. George Morgan gave "The Timber and Stone Trades." Messrs. Dawson, Brewer & Jelly (Bath Stone Firms) acknowledged the sentiment, each alluding to the amicable relations existing between the allied trades. Mr. Chas. Locke submitted

"Builders' Merchants," Messrs. Jno. Williams and Jno. Davis (Davis Bros.) replying, The President gave the health of the Secretary (Mr. J. D. Whitaker), whom he regretted was about to retire from the position. Mr. Whitaker returned thanks. He had always worked amicably with the builders and architects. He feared there were labour troubles ahead, but he advised the masters not to be tyrannised by the men. He believed in a fair day's work and a builder getting a fair price for his work.

GREAT YARMOUTH MASTER BUILDERS' ASSOCIATION.—The first annual dinner of the Great Yarmouth Master Builders' Association was held recently at the Bath Hotel, Yarmouth. The Mayor (Dr. Ryley) occupied the chair. The loyal and patriotic toasts having been honoured Mr. G. Wright gave the toast of "The Mayor and Corporation," and coupled with it the name of Mr. F. Burton, who responded. The Mayor proposed "Success to the Builders' Association." In reply, Mr. Beech, as President of the Association, said societies of the kind were being formed all over the country, and Yarmouth ought not to be behind in that respect. In the summer of 1894 the bricklayers came out on strike, and walked about for four or five weeks. There was no builders' society then, and single-handed they could not really arrive at an understanding. But eventually they met, and a settlement was agreed to. This year the men gave further notice, but the society arrived at an agreement with them and a strike was averted. They used to have different forms of agreement from different architects, but now, he was pleased to say, all architects provided the same form of agreement: they knew its contents, and it was not necessary to waste any time in perusing it. He was sure there existed now a better feeling between men, architects, builders, and everybody concerned.—Mr. Townsley proposed "The Architects," and, in response, Mr. Bottle said he considered an architect's first duty was to his clients. He had, also, to act with absolute fairness towards the builders, and if he did not he was unworthy of his position. On principle they were morally bound to accept the lowest tender; his firm insisted on that, and he did not see how any honourable man could do otherwise. The good old idea of a professional man was that he had to think of the interests of others before he thought of his own. Architects alone were no use, for their designs, however beautiful they might be, unless they were accompanied by industry, skill, intelligence, and capital to carry them into execution, would be only waste paper after all. He trusted the Association would be the means of promoting, if it were possible, an even better feeling between architects, builders, workmen, and clients, and so help to raise the tone all round, with the result of better work being done, and all parties being satisfied. Mr. Bray gave the toast of "The Visitors," and Mr. Saul replied. The only other toast was "The Chairman," proposed by Mr. I. S. Cooper and Mr. R. Nudd.

DIARY AND BLOTTING PAD, &C.—We have received from the Patent Victoria Stone Co., Limited, their diary and blotting pad for 1899.—— Messrs. Ashwell & Nesbit, Limited, warming, ventilating, hydraulic and electrical engineers, have issued a tear-off date-indicating almanac.——"The Gardening Year Book and Garden Oracle for 1899" (W. H. & L. Collingridge, 148 and 149, Aldersgate-street, E.C.) is the forty-first year of publication of a useful and well-arranged little work for those interested in gardening matters.

SALES OF PROPERTY IN 1898.—The total value of the property sold by auction at the Mart and in the country and suburbs (including Masons' Hall Tavern), also sales by private contract, registered at the Estate Exchange during 1898, amounted to 13,363,358*l.*, as compared with 12,205,824*l.* in 1897.

THE ENGINEERING TRADE.—According to Messrs. Matheson & Grant's Engineering Trades' Report, the New Year opens with workshops busy and good prospects in all branches of the engineering trades, the revival which, in the autumn of 1895, followed and redeemed the depression of the preceding three years, having since merged into a steady and increasing activity. The proportion of exports, however, is less in comparison with to imports than it was a year ago. This apparent anomaly of brisk trade and restricted shipments is due to the fact that much of the present prosperity arises from a home demand. But even in regard to exports the steel and engineering trades show better than most of the other trades in the country. Prices in iron and steel did not, up till the middle of 1898, move upwards in accord with the growing activity of manufacturing engineers, who had, therefore, the great advantage of cheap material and fuel, while their own prices were advancing. Since July, however, the growing demands on the iron and steel makers have reached the limits of their powers of prompt delivery, and there has been a rise in values, which is likely to continue. Hematite ore costs more than a year ago, and this, with dearer coke, neutralises some of the gain to the steel maker. The above conditions have afforded a good opportunity to the iron and steel makers of the United States, who have not only shipped pig iron and steel to Europe, but seem likely to compete seriously in the colonial and foreign markets of this country. The out-put capacity of the American steel works has grown enormously; steel rails are cheaper there than in England; the trade in steel beams for structural purposes is growing rapidly; and the proposed increase in the U.S. Navy is leading to an increase in the machinery for rolling plates. As regards structural steelwork, bridge builders are fully occupied, and there is so much work in view that when the steel makers are able, by a relaxed demand from the ship builders, to give prompter delivery and at lower prices, roof building and bridges are likely to afford ample employment. Structural steelwork ranges from 2*l.* to 3*l.* per ton dearer than it was two or three years ago. Iron founders, mechanical engineers, and machine tool makers are almost all busy, either directly for the users or as subsidiary to the great leading industries above referred to. Electric lighting and power transmission, hydraulic machinery, arsenal equipment, gas engines, road locomotives, motor cars, and machine tools are directions in which there is the greatest activity. The falling-off in the cycle-making factories has set free many workmen for the lighter branches of engineering.

NEW BUILDING LINE FOR OXFORD-STREET, MANCHESTER.—The suggestions for improving Oxford-street and its neighbourhood, made by Mr. Edward Salomons in his address to the Manchester Society of Architects recently, were discussed by the Improvement Committee of the Manchester Corporation at their meeting last week. Mr. Salomons' idea was that the Corporation should purchase the twelve acres of land bounded by the South Junction and Altrincham Railway, Great Marlborough-street, Saville-street, and Pritchard-street, at a probable cost of 194,000*l.*, and erect upon it a new reference library and art gallery, instead of spending a sum of at least half a million sterling on the infirmary site. He also suggested the widening of Oxford-street to 120 ft. as far as Whitworth Park. The first part of the scheme met with little support, several members criticising it severely from different points of view, one being that the site lies in a hollow. The question of widening the road, however, was more favourably received, and the Committee eventually declared a building line extending from Nelson-street to York-place. As soon as a suitable opportunity presents itself the resolution will be carried into effect.—*Manchester City News.*

LEGAL.

WORKMEN'S COMPENSATION.

AT Liverpool County Court, on the 30th ult., Richard Rogers, labourer, sought compensation under the Workmen's Compensation Act for the death of his son. It appeared that the son was a bricklayer's labourer, and whilst at work fell from a scaffold and was killed. He was unmarried, and lived in lodgings apart from his father. The respondent, Mr. P. Tyson, builder and contractor, urged that the father had no claim, as he was in no sense dependent on his son at the time of the latter's death.

Judge Collier said that on the facts stated he could not see how it could be contended that the father was, within the meaning of the Act, a member of the workman's family, dependent on him. Had the men lived together perhaps something might have been said on the point.

The Judge, however, reserved his decision.

CASES UNDER THE LONDON BUILDING ACT.

AT the Lambeth Police-court on the 29th ult., H. A. Townsend, of Lambeth, was summoned at the instance of the London County Council for having, contrary to the provisions of the London Building Act, 1894, and the amending Act of 1898, retained a structure to which Part 7 of the Act of 1894 applies without having obtained a licence as required by that part of the Act. Mr. T. Seager Berry, from the Solicitors' Department of the Council, appeared in support of the summons, and the defendant was represented by Mr. Temple Martin, instructed by Mr. Jonas. The proceedings were taken under section 84 of the Building Act of 1894, which makes it an offence for any person to set up a wooden structure without first obtaining a licence from the County Council, and under the amending Act of the present year, which prohibits the retention of such structures. The shed which gave rise to the proceedings is erected at the bottom of the defendant's garden. Mr. Berry contended that although the structure (which is used as a workshop), was contained within three walls it was not attached to them, and was consequently a structure within section 84 of the principal Act.—For the defence, Mr. Temple Martin disputed that this was a wooden structure within the meaning of the Act, and argued that the proceedings had not been taken within six months of the time of the "discovery" of the building by the District Surveyor in February last. The learned counsel went on to contend that this was not a wooden structure coming under Part 7 of the Act, but was a building under Part 6. The attention of the District Surveyor was called to the building, and it was erected according to his ideas. Upon its completion it was seen by the District Surveyor, and in the month of February he sent in his return to the Council. Under section 161 that return was deemed to be a certificate that the works were in accordance with the Act.—Mr. Berry put in the return of the District Surveyor, but pointed out that that official, although appointed by the Council, was in no sense a servant of the Council.—After considerable argument on the question of the time limit, Mr. Hopkins remarked that he doubted whether there were any merits in the Council's case, seeing that the structure had been passed by the District Surveyor.—Mr. Berry replied that the Council could not control the District Surveyor, but said he was prepared to take any reasonable course his worship might suggest.—Mr. Hopkins: I think a reasonable line would be to withdraw the summons.—Mr. Berry: Very well, sir, I will withdraw it.—Mr. Temple Martin asked for costs. The defendant had been put to considerable expense because the County Council and the District Surveyor were not quite in unison.—Mr. Berry resisted the application for costs, and eventually the summons was withdrawn, no order being made as to costs.

AT the Guildhall, London, recently, Messrs. Whitbread & Co., the owners of the "Black Bull," Holborn, were summoned, at the instance of Mr. McLachlan, the District Surveyor, for contravening the London Building Act. Mr. Horace Avory appeared for the London County Council, and Mr. Dixon represented the defendants. One of the points raised was the insufficiency of only one entrance, seeing that, in addition to the business premises, there was a dwelling house. The Alderman said he must uphold the claims of the District Surveyor, and make an order in accordance, with costs.—Messrs. Whitbread & Co. appealed against the decision of Mr. McLachlan (District Surveyor) regarding proposed work at the "Old Bell" public-house, 123, Holborn. The work, Mr. McLachlan declared, was in contravention of section 74 of the London Building Act. Mr. Dixon appeared for the appellants, and Mr. Horace Avory for the respondent. The Alderman dismissed the appeal, with costs, and directed the appellants to fully carry out the conditions.—*City Press.*

MEETINGS.

FRIDAY, JANUARY 6.

The Architectural Association.—Mr. H. H. Statham on "House Planning from the Æsthetic Point of View." 7.30 p.m.

SATURDAY, JANUARY 7.

British Institute of Certified Carpenters.—Special meeting at 6 p.m. Paper by Mr. C. W. Denny on "Staircases and Handrailing."

Sanitary Inspectors' Association.—The President's (Sir John Hutton), New Year's Address. 6 p.m.

MONDAY, JANUARY 9.

Surveyors' Institution.—Adjourned discussion on Mr. Wm. Weaver's paper on "The London Building Act and the Official Supervision of Buildings." 8 p.m.

Leeds and Yorkshire Architectural Society.—Mr. A. E. Henderson on "Byzantine Architecture in Constantinople" (illustrated). 6.30 p.m.

Liverpool Architectural Society.—A discussion will take place upon the following subjects: (1) The Architects' Registration Bill; (2) The Liverpool Electric Tramway System. 6 p.m.

Bristol Society of Architects.—Mr. F. Bligh Bond on "Rhythm in Design," with limelight illustrations.

TUESDAY, JANUARY 10.

Institution of Civil Engineers.—Mr. John Handsley Dales on "High-Speed Engines." 8 p.m.

Northampton Institute, Clerkenwell.—Lectures on Mediæval Architecture by Mr. Francis Bond, M.A.:—I. "Architecture and National Character." 7.45 p.m.

Sheffield Society of Architects and Surveyors.—Mr. F. T. Baggallay on "Common Errors in Design." 8 p.m.

Perth Architectural Association.—Mr. E. Forbes on "The Abbeys in the Stewartry of Galloway." With limelight illustrations. 8 p.m.

WEDNESDAY, JANUARY 11.

Edinburgh Architectural Association—Mr. A. C. Dickie on "Explorations in Palestine and Jerusalem." 8 p.m.

Liverpool Engineering Society.—Mr. R. D. Cripps on "Employers' Liability." 8 p.m.

Northern Architectural Association.—Mr. G. B. Bulmer on "Architectural Studies in Yorkshire." 7.30 p.m.

THURSDAY, JANUARY 12.

Dundee Institute of Architecture, Science, and Art.—Mr. A. C. Dickie on "Explorations in Jerusalem." 8 p.m.

FRIDAY JANUARY 13.

Institution of Civil Engineers (Students' Meeting).—Dr. Archibald Barr, Professor of Civil Engineering and Mechanics in the University of Glasgow, will deliver an address on "The Application of the Science of Mechanics to Engineering Practice." 8 p.m.

SATURDAY, JANUARY 14.

Perth Architectural Association.—Visit to Southern District School, South William-street.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

Open to Opposition until February 14.

[1897] 28,289.—SASH FASTENERS: *Charlotte Russom.*—The latch is opened and closed in the usual manner, but the knob is loose in a socket on the end of the latch lever; inside the socket is a spring which acts upon a spindle upon

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Memorial Hall and Art Gallery	Bradford Corp.	150*l.* : 100*l.* 50*l.*	April 14

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Paving Works	Beckenham U.D.C. ..	J. A. Angell, Council Offices, Beckenham	Jan. 9
*Making-up Road	do.	do.	do.
*Waterproof Coats and Leggings	Cty. Boro. of West Ham	L. Angell, Town Hall, Stratford	Jan. 10
Villa, Exeter-road, Exmouth	T. Rowsell.....	E. Ellis, Archt. Market-st. Exmouth.....	do.
Shop, Exmouth.....	do.	do.	do.
Granite, Flints, Slag, and Steam Coal	Acton D.C.	D. J. Ebbetts, 242, High-st. Acton, W.	do.
Additions to Business Premises, Londonderry.....	Austin & Co.....	Forman & Aston, Archt. Royal-avenue, Belfast ..	do.
Sewerage Works	Bedlington U.D.C.....	C. D. Forster, 24, Grainger-st. West, Newcastle	do.
Reconstruction of Pier	Southend Corp.	A. Fidler, C.E. Corporation Offices.....	do.
Hotel, Dewsbury-road, Leeds	Armley Brewery Co. Ltd.	Secretary, Co.'s Offices, Armley, Leeds	Jan. 11
Fire Engine Station.....	Kidderminster T.C. ..	A. Comber, Boro. Surv.	do.
Sewers, Great Corby	Carlisle R.D.C.	J. Little, Engr. Viaduct-chambers, Carlisle	do.
Four Houses, Bankfoot, Bradford....	.....	Brayshaw & Dixon, Archts. Bowling Old Lane, Bradford	Jan. 12
Schools.....	Little Ilford Sch. Bd.	S. Jackson, Archt. 65, Fenchurch-st. E.C.....	do.
Schools.....	Hathershaw Sch. Bd.	Winder & Taylor, Archt. Oldham	do.
Reservoir, Fowey	St. Austell R.D.C.....	T. H. Andrew, Engr. 1, Trevarrick-villas, St. Austell.....	do.
Sheds, High-street	Normanton U.D.C. ..	C. B. L. Fernandez, Council Offices	do.
Underground Conveniences	Glasgow Corp.....	J. Lindsay, 64, Cochrane-st. Glasgow.....	do.
*School	East Barnet Sch. Bd..	W. Pywell, 40, St. James-st. W.C.	do.
Tramway Sheds.....	Hull Corp.....	A. E. White, City Engr. Town Hall	Jan. 13
Training College, Limerick	Trustees.....	W. H. Byrne, Archt. 20, Suffolk-st. Dublin	Jan 14
Reservoir.....	St. Andrew's (N.B.) Commrs.	Belfrage & Carfrae, C.E. 1 Erskine-place, Edinburgh	do.
Widening Station-road, Barnstaple ..	.....	J. Baker, The Grange Bratton Fleming, Barnstaple	do.
Rebuilding Yorkshire Hotel, Burnley	J. Grimshaw, Ltd.....	R. Neill, Archt. 9, Grimshaw-st. Burnley	Jan 16
Club Premises, Rishton.....	Conservative Club....	Sandbach & Parker, Archts. 15 Richmond-terrace, Blackburn	do.
Street Works	Salford Corp.	Borough Engr. Town Hall	do.
Sewerage Works, Little Hulton	Bolton U.D.C..... ..	C.C. Hook-y.C.E. 34 Brazenose-st. Manchester.. ...	do.
*Sewerage	Hendon U.D.C.	S. S. Grimley, Offices, The Burroughs, Hendon, N.W.	do.
Police Station, Huyton, nr. Liverpool	Lancs. Standing Joint Committee	H. Littler, Archt. County Offices, Preston --	Jan. 17
Chapel	Handsworth Burial Bd.	E. Winder, Junr. Corn Exchange - chambers, Sheffield	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Railway Hotel, Southminster, Essex	Gray & Son	P. M. Beaumont, C.E. Maldon.....	Jan. 17
Additions to Poor Law Offices.....	Leeds Union.....	T. B. Wilson, Archt. 12, East Parade, Leeds.....	do.
*Street Works	Southgate U.D.C.	C. G. Lawson, Offices, Palmer's Green, N.	do.
*Carts, Vans, and Horse Brooms	Chiswick U.D.C.....	A. Ramsden, Vestry Hall, Chiswick.....	Jan. 18
Police Station, Dunoon, N.B.	.....	W. Fraser, Archt. Burgh-buildings, Dunoon	Jan. 21
*Road Making, and Supply of Granite Kerb and Asphalte Paving.....	Woodford U.D.C.	Surveyor's Offices, Woodford Green	Jan. 23
Reservoir Wall, &c. Hewletts	Cheltenham Corp.	Borough Surveyor, Municipal Offices	do.
*Widening Road, &c	Beckenham U.D.C. ..	J. A. Angell, Council Offices, Beckenham	do.
*Pulling Down Buildings and Making Alterations, &c.	Islington Vestry.....	J. P. Barber, Vestry Hall, Upper-st. N.	Jan. 25
*Cottage Home Buildings	Isle of Thanet Union..	Leonard Grant, High-st. Sittingbourne	do.
*Chimney Shaft at Workhouse.....	Tonbridge Union.....	The Clerk, 23, Church-rd. Tunbridge Wells	Jan. 26
*Infirmary, Tramp Wards, Lodge, &c. at Workhouse	Bakewell Union	E. M. Longsdon, Town Hall, Bakewell.....	Jan. 28
Reservoir	Midhurst R.D.C.....	Taylor, Sons & Co. C.E. 27, Great George-street, S.W.	Jan. 30
Sewers	Ampthill U.D.C.....	T. Hennell, Engr. 6, Delahay-st. Westminster, S.W.	do.
Police Station, Church-st.....	Berwick-on-Tweed T.C.	R. B. Dick, Archt. 55, Northumberland-st. Newcastle	Jan. 31
*Brickmaking	East Sussex C.C.....	F. J. Wood, County Hall, Lewes	do.
Bridge Works, Horninglow-st.	Burton-on-Trent Corp.	G. T. Lynam, Borough Engr.	Feb. 1
Five Houses, Arkwright-st. Burnley	.....	A. Robinson, Archt. 321, Padiham-rd. Burnley ..	No date
Sub-Post Office and Houses, Bramley, Leeds	F. Boocock.....	J. M. Fawcett & Son, Archts. 26, Albion-st. Leeds.....	do.
Club Premises, Fishpool	Stanley Conservative Club, Ltd.	C. H. Openshaw, Archt. Fleet-st. Bury	do.
Lodge and Four Cottages, Shenstone, nr. Lichfield.....	R. P. Cooper.....	W. Perry, Archt. Lichfield	do.
Brewery, Dickenson-rd. Rusholme ..	Messrs. Hyde	Harrap & Duffield, Archts. 34 Queen-st. E.C.....	do.
Rebuilding Mason's Arms, Crynant Neath	W. J. Rogers, Ltd.....	Swash & Bain, Archts. Midland Bank-chambers, Newport	do.
*Villa, Felixstowe	....	G. W. Thompson, Granville House, Arundel-st. W.C.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Assistant Marsh Bailiff	Cty. Boro. of West Ham	.....	Jan. 10
*Quantity Surveyor (Temporarily)	Reigate Corp.	3*l.* 3*s.* per week	Jan. 16
*Clerk of Works	Hereford County, &c. Asylum	3*l.* 3*s.* per week	Jan. 17
*Drainage Inspector	Fulham Vestry	2 . 2*s.* per week	Jan. 18
*Art Teachers	Sch. Bd. for London..	.....	do.
*Engineer and Surveyor	Sunderland Corp. ..	700*l.* increasing to 800*l.* peran.	Jan. 21
*Main Road Inspectors (three).....	Essex C.C.....	156*l.* per ann. each.....	Jan. 25
*(two) Assistant Surveyors	Middlesex C.C.	260*l.* per ann. each..... ..	do.
*Draughtsman	do.	175*l.* per ann.	do.
*General Indoor Assistant	do.	130*l.* per ann.	do.
*Clerk of Works	Cnty. of Southampton	3*l.* 10*s.* per week	No date

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. Contracts, pp. iv. vi. viii. x. & xxxiv. Public Appointments, p. xxxi.

The collar; when the window is fastened the end of the spindle drops into an opening in the bed-plate; on opening the latch the knob is raised and pushed back, thus the knob and spindle are turned, and the spring's action is suspended so as to keep the spindle end free from the bed-plate while the fastener is open.

28,656.—PAVING AND PAVING BLOCKS: *W. H. Northcutt.*—The several "claims" under this invention amount to fifteen in number; they relate to paving blocks constructed with a metallic shell and interior filling, with either raised or roughened or smooth faces or tops, with internal locking flanges and tongues, ledges, or grooves. The blocks are also curved in shape, for tunnels, sewers, &c.: in the process of laying them, key-blocks are employed.

29,144.—HANGING OF WINDOW SASHES: *R. H. Stanbridge.*—To each pulley stile is fixed a pulley (or drum, or wheel), the sash stile is grooved or mortised to receive one end of a leather strap or band, whose free end passes over the pulley and then down the boxing to the weight.

29,218.—GAS TAPS: *H. J. Yates.*—To regulate the supply of gas to two or more burners, when fed from a single inlet, the inventor devises a single inlet and double outlet tap, whose conically socketted body part has a single inlet directed from one side, to range with one of the outlets directed from the other side, whilst above the outlet is a second one leading to a separate burner, or pipe. The plug has a series of lateral gas-way passages to correspond with the outlets, and by-pass channels between either of the series of holes in the plug and its corresponding outlet.

30,241.—JOINTS OF EARTHENWARE AND OTHER PIPES: *R. Ewing.*—The claim is for the adoption of an eccentrically shouldered socket end, deep enough to maintain a true alignment within the interior of the pipes when spigot and socket are put together, but narrowing towards the socket's upper side so that the spigot has full play in the socket; a recess is formed in the socket's inner butt-end, and is rounded into the crown of the shoulder for purposes of filling. If the joint is to be made by running cement into it an external flange is fashioned near the spigot's extreme end, which flange passes into the socket to abut against the face of the shoulder, and another external flange is placed upon the spigot some distance behind, the rectangular end of the socket resting in a recess or rebated part of the flange.

30,602.—ACETYLENE LAMPS: *J. Ritchie.*—The lamp comprises a base, gas-holder, cistern, and burner with globe, put together in a portable form; the generators, pipes, and taps are placed within the base, and are arranged so as to generate and cool the gas, there being a recess for waste water, keeping the carbide dry when no gas is being consumed—the carbide holder has a perforated bottom and a drain into which the waste water collects from the holder.

[1898.] 392.—CONSTRUCTION OF BATHS: *F. S. Smith & J. Houldsworth.*—A recess for the user's head, shoulders, and arms is formed by bulging out the bath at its head and sides, soap trays and drainers are provided, together with lips or ledges for the user's hands when he raises himself from the bath, and lips near the plug for his heels; the head end rises up perpendicularly above the head-rest so that the outside size of the bath is not thereby increased.

1,117.—TILES, &c.: *W. Price.*—For making undercut recesses at the tile's back the die which is to form the back has auxiliary dies arranged in pairs projecting above the main die's face, and having a lateral or expanding movement in opposite directions, the movement being utilised to form the dovetails or undercuts on two opposite edges of each of the recesses in the tile's back; in the reverse movement of the tile-press the two parts of each pair of auxiliary dies contract towards one another, so as to free them from the undercuts in the tiles, and enable the latter to be removed from the die without damage to the projecting edges of the undercuts or other parts of the tile.

1,477.—ACETYLENE GENERATING LAMPS: *J. G. A. Kitchen.*—The water falls by gravity upon the carbide, its supply being regulated by means of a cylinder closed at one end, with an orifice in the other end, and a piston, that slides in the cylinder, moved by a screw; an absorbent material, preferably a wick, fills the space between the piston and the cylinder.

1,641.—STREET GAS LAMPS AND OTHER SIMILAR LAMPS: *A. Firth.*—That the gas may be automatically raised or lowered at predetermined times a time-piece or clock-work mechanism is arranged to operate a valve or tap in the service pipe, the tap being formed so as not to turn the light quite out; the mechanism drives a disc or wheel, through which project adjustable studs or pins, which start a separate train of wheels (similar to the striking train of a striking clock), and so cause the gas to be turned up or down.

2,427.—VARIABLE ELECTRICAL RESISTANCES OR RHEOSTATS: *R. Waygood & Co., and P. I. Unwin.*—The invention relates to resistances that are especially suitable for the starting switches for the motors of lifts, cranes, and hoists. The novelty lies in substituting a badly conducting powder—such as flake graphite—with a conducting blade or plunger, which is inserted into it, for a water resistance, wherein a metallic plate rod is gradually immersed in water, but of which the water is liable to become heated to boiling point, and so to be lost by evaporation.

2,933.—FLUSHING CISTERNS: *W. Torloff.*—The object of the contrivance is to construct a flushing cistern that shall normally remain empty. The ball-cock admits water when the ball is depressed, a tumbler or weight mounted on the cistern's upper part is connected to the ball-cock in such a manner that when the tumbler is thrown over the ball-cock's centre, it supports the ball and keeps the cock closed. A valve at the cistern's base is connected to the tumbler-shaft so as to be lifted when the tumbler is tilted, but when the tumbler tends to keep the inlet valve open it presses on the flushing valve and keeps it closed. When a flush is needed, a cord is pulled, which throws the tumbler over its centre, thus the flushing valve is closed, and the ball falls, the water then enters the cistern until it raises the ball, and as it does so the tumbler is again tilted into its normal position, which action raises the valve at the bottom of the cistern and effects the flush.

3,246.—GRINDSTONES: *J. Barrow.*—The apparatus comprises a grindstone fixed on a horizontal shaft between discs, and running in a trough formed with a hollow partition and with pockets or wells, having outlets for water and sludge, a perforated pipe with regulating cocks, for applying water under pressure to the stone's underside, adjustable water-deflectors, and a top-guard or cover; the tool-holding and adjusting mechanism has a guide-bed plate formed upon the trough, fitted with a bottom saddle adjustable by means of screw spindles; a slide that moves across the guide-plate, and carries a slotted vertical cylindrical flanged boss or tool-holder, with clamping screw, and a covering plate fixed upon, and moving with, the slide.

3,263.—CHIMNEY-POTS: *J. Taylor & L. Ashworth.*—Down-draught is prevented by the combination of an upper part formed with a series of louvre openings, and a lower part formed with four funnel-shaped air passages leading from near the bottom of the exterior upwards and inwards into the interior of the chimney-pot.

3,523.—CONVEYANCE OF SANITARY PIPES, &c., FROM PLACE TO PLACE: *R. Wragg.*—For conveying the pipe to the drying-shed is employed a "dandy," fitted with the usual wheels and handle, but to portions of the rigid framing that extends beyond the wheel-bearings is pivotted a movable framework consisting of two side plates and a base, from the back whereof passes a rod ending against a stop near the handle of the rigid framing. In operation, the handle is raised until the end of the rod stops against the stop in the framing; the framework's base, being horizontal and near the ground, is pushed under the plate upon which the pipe stands; on the lowering of the handle the base is lifted up, the movable framing swinging in its top bearings ensures the carriage of the pipe in a truly vertical position, while a joint in the rod adjusts the difference between the relative positions of the handle and rod when the fixed framing of the "dandy" is depressed to raise the pipe and its plate.

3,859.—FASTENING CURVED AND STRAIGHT CORRUGATED SHEETS FOR ROOFING AND OTHER PURPOSES: *J. B. Pearson.*—To dispense with the punching of holes in the sheets, and the use of rivets and bolts are adopted especially prepared length-strips, in combination with an angle-iron strap, placed over the strips and the sheets, and bolted to a clip or clips embracing the roof purlin, or held in position by a hook-bolt that embraces the purlin.

5,427.—IMPROVEMENTS IN LAVATORIES: *W. Cassels.*—The inventor improves his Patent 3,244 of 1896 by making the lavatory with three open compartments—one at the back to receive the water supply from ordinary taps, one in the middle for washing purposes which is filled through an opening from the back compartment, and a trough

shaped compartment around the middle one to receive and discharge its overflow.

9,829.—CONSTRUCTION OF BRIDGES, &c.—*J. Shields.*—To obtain a wider span the girder or other support is constructed with a triangular, preferably an equilateral, section transversely across its width; the span girder bridge is composed of three inter-connected girders, arranged to form a bridge triangular in transverse section, with its apex uppermost, or lowermost, according to circumstances.

19,403.—DRAUGHTSMEN'S TRIANGLES: *F. Ziegler.*—The triangle is constructed so that the difference between each two of its angles lying on one and the same side of the triangle is equal to a given acute angle, it has guiding signs marked upon its three sides, and on both surfaces thereof; it is devised for the ready production and transfer of given acute angles—of which one forms either the sum or the difference of the two others—that it may be required to repeat in various positions, and for the finding and transferring of the angle which supplements each one of the said three angles in order to form a right angle.

22,997.—CEMENT FOR ATTACHING SURFACEING MATERIAL, TILES, GLASS PLATES, &C., TO BUILDING SURFACES, AND SO FORTH: *F. Schroeter.*—The cement is prepared by mixing joiners' glue with water to a thin fluid consistency, and reducing it to a pasty mass by the addition of powdered whitening; to the compound is added finely ground gypsum.

23,159.—ARTIFICIAL STONE: *A. H., H., and G. van der Vijgh.*—By way of an improvement upon the compound specified in No. 25,880, of 1896, the inventors substitute pumice stone, and slag sand from molten iron, for coke. So the composition is constituted thus:—Pumice stone (20 parts), slag sand (10), lime (18), tan (12), plaster of Paris (20), and water (20).

NEW APPLICATIONS.

December 19—24.

26,730, E. Green, Mechanical Purification of Sewage. 26,736, C. E. Challis, Composition for Removing Soot and Scale from Flues, &c. 26,738, T. Taylor, Conduit Inspection Fittings for Electrical Wiring. 26,741, H. F. Horsnaill, Door-Check. 26,755, Lowe & Shawyer, Roofing Construction. 26,765, E. Britton, Securing Window Sashes, Doors, &c, 26,768, A. E. Cattermole, Portière Rods 26,770, H. H. Bohndel, Incandescent Mantels. 26,776, A. W & L. W. Case, Rotary Pumps. 26,779, Myers & Driggs, Windows. 26,783, J. C. Etchells, Automatical Water-supply- 26,785. J. Brockie, Automatical Lathes. 26,793, C. S. Snell, Gas Compressing and Regulating Apparatns Suitable for Incandescent Gas Lighting. 26,795, W. A. Kindt, Hand Saws. 26,797, J. C. Trueman, Closing Junction Inlets and Outlets in Stoneware Pipes when not in use, applicable also for Joining Pipes. 26,804, W. J. E. Binnie, Construction of Subterranean Tunnels and Machinery therefor. 26,807. F. L. Monkhouse, Electrical Switches. 26,811, McQuade & Smethurst, Substitute for Wood-paper, Papier-Mâché, &c. 26,819, F. W. Barratt, Acetylene Lamps. 26,823, J. C. Dalman, Theatre and other Folding Chairs and Seats. 26,825, J. O. Conway, "Sash Cords and Analogous Devices." 26,830, A. Benton, Man-holes for Sewers, Drains, &c., Method of Ventilating the same, and Lids or Covers therefor. 26,831, A. H. Gosling. Jointed Rules used by Joiners and other Artificers. 26,852, A. Stevenson & others, Safety Sliding Girder Clip for use in Building Operations, &c. 26,855, Wright & Lidstone, Dust and Draught Protector for Doors, &c. 26,859, J. Higson, Brick-making. 26,862, Gardner & Kelly; 27,085, H. A. du Clou, and 27,105 and 27,252, K. Gossweiler, Generation of Acetylene Gas. 26,878, E. H. Callaway, Moulding Presses. 26,892, Rippingille's Albion Lamp Company & Cole, and 27,200, F. S. Rippingille, Oil Cooking-stoves. 26,902, Paryczko & Litynski, Heating the Contents of Baths, &c. (see also 27,187). 26,906, Stäckig & Carlson, Platform Weighing Machines. 26,919, J. E. Whiting, Shutters or Sluices for Water-ways. 26,923, Youngs, Hooks for Cranes and other Lifting Machinery and Appliances. 26,931. J. Wilson, Filter Presses and Filtering Apparatus. 26,941, Harris & Corbitt, Method whereby a great illuminating power is obtained from Acetylene Gas by means of lowering its temperature. 26,952, E. Frith, Pneumatical Oil-lamp Extinguisher. 26,955, M. Wilkinson, Window Fastener. 26,967, Jackson & Swinburn, Thimble Links for Connecting Ropes with Chains or Shackles. 26,972, McMorran & Co., Portable Fire-extinguishing Apparatus. 26,991, E. Seé, Roofs. 26,997, R. Matthews. Packing White Lead, &c. 27,000, E. O. Sachs, Stage Floors. 27,008, C. F. A. E. H. von Forell. Cement. 27,025, F. C. Lynde, Baths, Lavatories, and Sinks. 27,026, J. Brady, Drainage of Cities, Towns, and other areas. 27,031, F. W. Hill, Chimney Pot and Ventilator. 27,035, Porter & Hirst, Cooking Ranges, &c. 27,046, Morrison and Baird, Stoves and Cooking-ranges. 27.056, Dhoondi Raj Thengdi, Steam Turbines, &c. 27.061, P. T. Sievert, Sheet Glass. 27,064, W. Turnbull, Sliding-sash Windows. 27,073. G. T. Augsparg, Gas Regulators. 27,074, W. E. Irish, Electrodes for Arc Lamps. 27,093, A. R. Sennett, Removal of House or other Refuse. 27,097, H. R. Ottesen, Arc Lamps. 27,107, A. A. Atkin, Cutter Blocks. 27,118, J. J. Ingham, Waterproof Material for Bridges, Viaducts, Flat Roofs, Footways, &c. 27,123, Beechey & Wright, Coin Freed or Actuated Gas and other Meters. 27,136, A. A. Millns, Non-Poisonous White Lead (Sulphate). 27,142, W. A. Burns, Electrically Driven Ventilating Fans. 27,146-7, E. Hervais, Drawing Pens. 27,149, S. J. Payne, Composition for Binding and Cementing Gravel, Stones, &c. 27,151, T. Bayley, Gas Compression. 27,155, J. Young, Sewer Drain Interceptors. 27,156, G. C. Leslie, Smoke Consuming and Heat Economising Apparatus. 27,162, Green & Foster, Heating Green Houses and Supplying them with Heated Air, Moisture, Fumigating Gases. &c. 27,164, G. Hanf, Water Gauge. 27,168, H. G. Dempster, Distance Measuring Instruments, &c. 27,173, J. Rowe, Bricks. 27,181, Reed & Knight, Stoppers for Stoneware Pipes, Gullies, Traps, and Junctions. 27,187, A. Blachette, Heating Water for Baths, &c. 27,198, A. Martini, Gas Ignition. 27.210, H. R. Owen, Producing and Diffusing Cool Air Currents. 27,218, J. A. Schmidt, Pocket Knife for Artisans and Mechanics. 27,219, A. J. Parkins, Acetylene Lamp. 27,220, J. Ferguson, Household Refuse Bins, &c. 27,228, Geipel & Lange, Regulators for Hot Water Heating Apparatus. 27,249, J. G. Hearfield, Hinges. 27,254, C. Wood, Electrical Arc Lamps. 27,257, W. G. Treadwell, Door, Window, and Other Fastenings 27,266, C. D. Phillips, Circular Saw Guard. 27,268, Mordey & Bevis, Alternate Current Arc Lamps and Lanterns. 27,269, Kunkelmann and Others, Measuring Electricity. 27,270, Vallance & Kay, Miners' Safety Lamps

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

December 20.—By JOLIFFE & FLINT (at Bournemouth).

Branksome, Dorset.—Layton-rd. West, 12 cottages, u.t. 87 yrs., g.r. 24*l.* £1,310
Shillito-rd., 5 villas, u.t. 87 yrs., g.r. 20*l.* 1,575

December 21.—By FOSTER & CRANFIELD.

Camberwell.—12, Knatchbull-rd., u.t. 76 yrs., g.r. 9*l.* 5s., e.r. 60*l.* 620

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I.	load	10/10/0 15/10/0
Sequoia, U.S.ft.cu.		1/9/0 2/0/0
Ash, Canada, load		3/17/6 5/5/0
Birch, do.		3/0/0 5/0/0
Elm, do.		4/12/6 5/15/0
Fir, Dantsic, &c.		2/0/0 4/0/0
Oak, do.		3/5/0 3/15/0
Canada		4/0/0 6/0/0
Pine, Canada red.		0/0/0 0/0/0
Do. yellow		4/7/6 6/5/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg.		4/0/0 6/10/0
Wainscot, Riga, &c., log		3/15/0 5/15/0
Odessa, crown		3/15/0 5/15/0
Deals, Finland 2nd & 1st std. 100		9/15/0 10/5/0
Do. 4th & 3rd.		9/15/0 10/5/0
Do. Riga		8/5/0 9/5/0
St. Petersburg, 1st yellow		11/15/0 14/5/0
Do. 2nd yellow.		10/15/0 12/5/0
Do. white		9/15/0 11/15/0
Swedish		9/15/0 16/15/0
White Sea		10/15/0 18/0/0
Canada, Pine 1st		18/15/0 25/5/0
Do. do. 2nd		13/15/0 17/0/0
Do. do. 3rd, &c.		6/0/0 10/0/0
Do. Spruce, 1st.		8/10/0 10/10/0
Do. do. 3rd and 2nd		7/5/0 8/10/0
New Brunswick		7/5/0 8/0/0
Battens all kinds		5/0/0 16/0/0
Flooring boards, sq., 1 in., prep. 1st		9/6 16/3
Do. 2nd		8/0 13/3
Other qualities—		6/3 7/0
Cedar, Cuba, ft.		/4 /4½
Honduras, &c.		/3½ /4½
Mahogany, Cuba.		/5½ /7
St. Domingo, cargo av.		/5 1/3
Mexican, do. do.		/3½ /4
Tobasco, do. do.		/4 /6½
Honduras, do.		/4 /6
Box, Turkey, ton.		4/0/0 15/0/0
Rose, Rio		7/0/0 14/0/0
Bahia		6/0/0 12/0/0
Satin, St. Doming.		/5 1/0

TIMBER *(continued)*.		
Satin, Porto Rico	0/0/9	0/2/0
Walnut, Italian	0/0/3	0/0/7
METALS.		
Iron—Pig, in Scotland	ton	2/9/6 0/0/0
Bar, Welsh, in London		6/0/0 6/5/0
Do. do. at works in Wales		5/15/0 5/17/6
Do. Staffordshire, in London		6/5/0 7/10/0
COPPER—British cake and ingot		61/15/0 62/5/0
Best selected		62/5/0 62/15/0
Sheets, strong.		66/0/0 67/0/0
Chili bars		58/3/9 0/0/0
YELLOW MTL. lb.		5d. 5⅛d.
LEAD—Pig		
Spanish	ton	13/5/0 0/0/0
English com. Brands		13/10/0 0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards		14/10/0 0/0/0
Pipe		15/0/0 0/0/0
ZINC—English sheet	ton	28/0/0 0/0/0
Vieille Montagne		29/0/0 0/0/0
Spelter		24/0/0 24/5/0
TIN—Straits		89/0/0 0/0/0
Australian		89/12/6 90/2/6
English Ingots.		91/15/0 92/15/0
Banca		0/0/0 0/0/0
Billiton		0/0/0 0/0/0
OILS.		
Linseed	ton	16/12/6 0/0/0
Cocoanut, Cochin		27/15/0 0/0/0
Do. Ceylon		24/10/0 0/0/0
Palm, Lagos		21/15/0 0/0/0
Rapeseed, English pale		22/5/0 0/0/0
Do. Brown		20/15/0 0/0/0
Cottonseed ref.		15/0/0 16/0/0
Oleine		17/0/0 18/0/0
Lubricating U.S.		0/5/3 0/7/6
Do. Black		0/5/0 0/6/6
TAR—Stockholm	barrel	1/5/0 0/0/0
Archangel		0/18/0 0/0/0
Turpentine		32/10/0 0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ALNWICK.—For the erection of cottages, &c., Twizell Estate, Warenford, for Mr. R. W. Maling. Mr. G. Reavell, jun., architect, Alnwick:—

Edward Fordy	£676 0	Elliot Bros., Preston,	
R. & G. Brown	647 15	Chathill (accepted)	£590 0

BICESTER.—For additions to schools, Crockwell, for the National School Managers. Mr. A. M. Mowbray, architect, Oxford:—

Grimsby & Son	£203 10	T. Grimsby, Bicester*	150 0
J. W. Smith	200 0	* Accepted.	

BRIXHAM.—For the erection of a villa residence at Heath Common, for Mr. C. Hellyer. Messrs. Norman G. Bridgman & Walter H. Bridgman, architects, of Torquay and Paignton. Quantities by Mr. Vincent Cattermole Brown, of Paignton:—

W. A. Goss	£2,000 0	Hazlewood Bros.	£1,498 10
Rd. Yeo	1,850 0	Hayman & Wills, Brixham*	1,390 0
J. C. & W. Watson	1,787 0	* Accepted.	
T. Silley	1,741 0		

BRIXHAM.—For the erection of four cottages for Mr. John Martin. Messrs. Norman G. Bridgman & Walter H. Bridgman, architects, of Torquay and Paignton:—

W. Wyatt	£750 0	Rd. Yeo	£690 0
G. Wotton, Brixham*	695 10	G. Cooksley	688 0
* Accepted.			

BUCKFASTLEIGH.—For the erection of business premises at Buckfastleigh, for the Buckfastleigh Co-operative Society, Limited. Messrs. Norman G. Bridgman & Walter H. Bridgman, architects, of Torquay and Paignton. Quantities by Mr. Vincent Cattermole Brown, of Paignton:—

H. J. Almond	£2,085 0 0	Hosking Bros.	£1,621 12 6
W. A. Goss	1,850 0 0	J. C. & W. Watson	1,616 0 0
T. Wee[illegible]	1,717 0 0	Jackson & Son	1,562 10 0
G. Arscott	1,650 0 0	J. Selwood	1,540 0 0
S. Furneaux & Son, Buckfastleigh*	1,634 7 0	J. Milman	1,525 18 0
		* Accepted.	

BURGHILL (Hereford).—For additions and alterations to the County and City Lunatic Asylum, Burghill, near Hereford. Messrs. Giles, Gough, & Trollope, architects, 28, Craven-street, Charing Cross, W.C.:—

Treasure	£35,986	Willcock	£24,203
James	36,891	Williams	23,490
Stephenson & Bastow	30,147	Lewis	22,967
Smith	25,587	Bowers, Hereford*	22,525
Rowbotham	25,360	* Accepted.	

BLACKMORE.—For the erection of cottages at Fengieth Hall. Mr. Richard Mawhood, architect, Chelmsford:—

Knights	£690	H. Barlow, Ongar*	£680
* Accepted.			

CHIGWELL.—For erecting a police-station at Chigwell, for the Receiver for the Metropolitan Police District. Mr. J. Dixon Butler, Architect. Quantities by Mr. W. H. Thurgood:—

Higgs & Hill	£4,744	C. Ansell	£4,208
Grover & Sons	4,560	Lawrance & Sons	4,198
Chessum & Sons	4,299	Lathey Bros.	4,089
F. J. Coxhead	4,297	Willmott & Sons	4,026
Almond & Son	4,255	H. Wells & Sons	3,979

CHURCH (Lancs).—For sewering, &c., Riding Barn-street and several other streets, for the Urban District Council. Mr. W. E. Wood, Surveyor, District Council Offices, Church:—

Riding Barn-street.
W. H. Bury, Oswaldtwistle.*
Back Hyndburn-road.
W. H. Bury, Oswaldtwistle.*
Elmfield-street.
J. Grimshaw, Church.*
Back Elmfield-street.
J. Grimshaw, Church.
Warwick-street.
J. Grimshaw, Church.
[All at schedule of prices.]
* Accepted.

CHURCH (Lancs).—For flagging, paving, &c., Water-street, for the Urban District Council. Mr. W. E. Wood, Surveyor, District Council Offices, Church:—

Levi Sharples	£213 0 6	W. H. Bury, Oswaldtwistle*	£183 16 5
James Grimshaw	205 8 8	* Accepted.	
John Moore	199 3 8		

COVENTRY.—For the erection of electric light sub-stations, for Coventry Corporation. Mr. T. Swindlehurst, engineer:—

Cave	£868 7 3	Wootton	£833 0 0
C. G. Hill	849 0 0	C. H. Barber*	818 14 0
Golby	839 0 0	* Accepted.	

DARTMOUTH.—For the erection of stone boundary walls, &c., North Parade, for the Urban District Council. Mr. T. O. Veale, surveyor, Castle View House, Dartmouth. Quantities by Mr. E. H. Back, of Dartmouth:—

H. Anderson	£434 9 1	Robert Watts	£402 10 0
Richard C. Pillar	405 0 0	R. T. Pillar (accepted)	363 0 0
[All of Dartmouth].			

DRIFFIELD (Yorks).—Accepted for the erection of St. John's Church (exclusive of seats and heating), for the Building Committee. Messrs. Hicks & Charlewood, architects, 42, Grainger-street, Newcastle-on-Tyne. Quantities by Mr. J. P. Allen, Newcastle-on-Tyne:—

Leason & Son, Driffield £3,329 7 9

KINGSWEAR.—For alterations and additions to "Bryndart" for Mrs. Walker. Messrs. Norman G. Bridgman & Walter H. Bridgman, architects, of Torquay and Paignton:—

W. A. Goss	£410	J. C. & W. Watson, Torquay (accepted)	£400

LEYTONSTONE.—Accepted for erecting a new infirmary, Whipps-Cross-road, Leytonstone, for the Guardians of the West Ham Union. Mr. F. J. Sturdy, architect. Quantities by Mr. J. Moore Smith, Union-court, Old Broad-street:—

W. Shurmur £158,994

LLANDAFF (Wales).—For the erection of an assembly hall, &c., for the County School Governors. Mr. G. E. Halliday, architect, 14, High-street, Cardiff. Quantities by Mr. J. W. Rodger, Cardiff:—

Symonds & Co.	£6,205 10 0	H. Smith	£5,224 12 3
T. S. Chubb & Co.	5,875 1 0	Jones Bros.	5,130 0 0
E. R. Evans Bros.	5,653 16 3	Owens & Evans	5,108 18 8
Shepton & Son	5,651 14 4	E. Turner & Sons	4,846 0 0
W. Thomas & Co.	5,567 0 0	C. C. Dunn, Cardiff*	4,573 4 0
Newman & James	5,485 0 0	* Accepted.	

LONDON.—For alterations, additions, and fittings at the "Earl Derby" public-house, London-road, Plaistow, E., for Messrs. Holt & Co. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E.:—

	Alterations, &c.	Fittings.	Total.
W. Shurmur	£2,023	£896	£2,919
W. J. Maddison	2,084	821	2,905
A. E. Symes	2,050	850	2,900
J. & H. Cocks	1,954	844	2,798

LONDON.—For erecting artisans' dwellings, Shadwell Mr. W. G. Drew, architect:—

Holloway Bros.	£5,745	H. L. Holloway	£4,600
Clarke & Bracey	5,286	W. Shurmur	4,595
B. E. Nightingale	4,693	S. J. Scott	4,597

LONDON.—For rebuilding the "Old Axe" public-house. Mr T. W. Aldwinckle, architect:—

Shillitoe & Sons	£10,400	Todd & Co.	£8,747
H. Wall & Co.	9,453	Edwards & Medway	8,581
Johnson & Co., Ltd.	9,285	Hopkins	8,5[illegible]9
W. Shurmur	8,973	Sheffield Bros.	8,4[illegible]7

LONDON.—For the enlargement of Homerton-row School. Mr. T. J. Bailey, Architect:—

J. Grover & Son	£9,070	C. Cox	£8,582
Perry & Co.	9,064	J. & C. Bowyer	8,551
W. M. Dabbs	8,989	W. Shurmur	8,235
E. Lawrence & Sons	8,814		

LONDON.—For the erection of a three-floor factory and offices, 9k[illegible] Ford, for the Britannia Folding Box Company, Limited, under the superintendence of Messrs. W. Eve & Sons, 10, Union-court, E.C.:—

Parker	£13,500	J. H. Johnson	£12,180
Kirk & Randall	13,142	Perry & Co.	12,145
Perry Bros.	12,777	Patman & Fotheringham	12,049
Harris & Wardrop	12,574	J. Godfrey & Son, Lower Clapton*	11,990
Holliday & Greenwood	12,221		
* Accepted subject to modification.			

LONDON.—For the erection of a shop on the site of No. 351-3, Old-street E.C., for Messrs. Kruzin Bros., under the superintendence of Messrs. W. Eve & Sons, 10, Union-court, E.C.:—

Perry Bros.	£857	J. H. Johnson	747
Salt	820	J. Chessum & Son	729
Kilby & Gayford	792	E. Houghton & Son, Stroud Green*	624
J. Carmichael	756	* Accepted.	
Harris & Wardrop	756		

LONDON.—For the erection of fireproof staircase at Messrs. Kearley & Tonge's, Limited, warehouse, Mitre-square, under the superintendence of Messrs. W. Eve & Sons, 10, Union-court, Old Broad-street, E.C.:—

Gregory & Co	£1,235	H. Brown	£991
A. Monk	1,067	Harris & Wardrop	986
Lawrence	1,049	Patman & Fotheringham, Islington*	926
J. Chessum & Sons	1,020		
* Revised and accepted.			

LONDON.—For alterations to "John Bull" public-house, Tyers-street, Lambeth. Mr. Geo. Hubbard, architect :—

Burman & Son	£697	Edwards & Medway	£523
J. W. Heeps	599	Hill	483
W. Nash	547		

LONDON.—For the erection of two chapels at the workhouse at St. Pancras, for the Guardians of St. Pancras. Messrs. A. & C. Harston, architects, 15, Leadenhall-street :—

Leslie & Co., Ltd.	£6,137	T. Bendon	£5,063
Miskin & Sons	5,678	W. Johnson & Co., Ltd.	4,988
E. Lawrance & Sons	5,446	Spencer, Santo & Co., Ltd., Westminster*	4,816
H. Wall & Co.	5,135		

[Architects' estimate, £4,500.]

* Accepted.

LONDON.—Accepted for the erection of six villa residences on the site of No. 2, Lyndhurst-road, Peckham, for Mr. W. Laud. Mr. A. E. Mullins, architect, 97, Barry-road, East Dulwich, S.E. :—

Balaam Bros. £2,718

[The supply of stoves, ranges, baths, and other hardware is not included in the contract].

LOUGHBOROUGH (Leicestershire).—For the erection of club premises, Baxter Gate. Mr. W. T. Hampton, architect, Swan-street, Loughborough :—

Jas. Gorvett	£3,169	Kirk & Fletcher	£2,860
E. Orton	3,073	W. Corah	2,850
W. F. Harding	2,975	Watson & Lovett	2,825
W. Tailby	2,960	Main, Kendal, & Main	2,795
Moss & Son	2,940	Thos. Barker & Son, Loughborough*	2,775
C. Dobson	2,870		

* Accepted.

[Architect's approximate estimate, £2,606 16s.]

MAIDENHEAD.—For (1) making up Grenfell-road, (2) Penyston-road sewer, for the Town Council. Mr. P. Johns, C.E., Guildhall, Maidenhead :—

Making up Grenfell-road.

Bentham	£832 2 3	Free & Son	£699 17 6
F. Talbot	714 12 3	W. Lee & Sons	579 0 0

Penyston-road sewer.

Lee & Son	£341 10 6	Free & Son	260 0 0
Bentham	330 3 9	Talbot	243 0 6
C. W. Cox & Son	286 0 0		

MANCHESTER.—For new offices at the works of Messrs. Waites, Sons & Atkinson, Ltd. Mr. W. Cecil Hardisty, architect, Manchester. Quantities by Mr. Charles Jackson :—

P. Hodkinson	£1,225	Young, Tinker & Young	£1,175
Megarity & Co.	1,220	F. & E. Haynes*	1,130
J. Riley	1,219		

* Accepted.

[The lowest tender subsequently reduced to £1,069 10s. in consequence of sundry deductions.]

MORECAMBE.—For alterations to West View-terrace. Mr A. L. Lang, architect, 12a, Pedder-street, Morecambe :—

John Edmondson	£204 0 9	J. W. Dodgson	£195 0 0
Wm. Pool, Morecambe (accepted)	195 10 10	Parkinson & Tiddle	183 0 0

NUNEATON.—For the erection of "Royal Oak," Nuneaton. Mr. J. F. Tickner, architect :—

A. A. Wincott	£1,300 0	Stanyan	£1,171 0
Norton	1,239 0	C. H. Barber*	1,171 0
Wincott	1,175 10		

* Accepted.

PUTNEY.—For the erection of a new public library in Disraeli-road, Putney. Mr. Francis J. Smith, architect :—

Stimpson & Co.	£8,960	Shepherd	£8,748
Adamson	8,896	Roffey*	8,290
Nightingale	8,775		

* Accepted.

PUTNEY.—For the construction of three new roads and sewers, Putney Park Estate, S.W., for the trustees of the late H. M. Rowe. Messrs. Geo. Elkington & Son, architects and surveyors, 95, Cannon-street, E.C. :—

J. Mears	£3,952	Hy. Woodham*	£3,394
G. Wimpey & Co.	3,517		

* Accepted.

SPRINGFIELD.—For erecting a villa, Mount Hill-avenue. Mr. Richard Mawhood, architect, Chelmsford :—

Smith & Son	£878	Samms	£790
Fincham	825	Gowers	735
Choat & Son	799	Johnson, Chelmsford*	687

* Accepted.

WAKEFIELD.—For laying pipes, &c., for the Emley Urban District Council. Mr. S. Shaw, C.E., Union-street, Dewsbury :—

J. & J. Aliffe, Ossett £534 12 4

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J. Blakeborough & Sons, Brighouse 63 3 0

WARMINSTER.—For the erection of a billiard-room, Greenhill, for Mr. C. M. Thornton. Mr. A. F. Long, architect, Warminster :—

Weston	£384 10 0	F. Curtis	£343 10 0
J. Pearce	364 10 0	H. Franklin, Warminster*	321 16 6
J. Gaisford	358 5 0		
P. J. Ponton	357 16 9		

* Accepted.

WATFORD.—For the erection of two houses for Mr. R. Oxenham, under the superintendence of Messrs. W. Eve & Sons, 10, Union-court, E.C. :—

Wood Bros.	£5,986	G. & J. Waterman	£5,267
Chas. Brightman	5,420	George Higgs, Watford*	4,930

* Accepted.

WIMBLEDON.—For a proposed house for Mrs. A. Campbell on the Beloeden Estate, Wimbledon. Mr. J. H. Eastwood, architect, 42, Cheniston-gardens, W. :—

Simmonds Bros.	£3,950	J. Burges	£3,050
Price & Price	3,517	Lathey Bros.	2,916
Whitehead Bros.	3,160	Bulled & Co.	2,856

WRITTLE (Essex).—For the erection of four cottages at Skiggs Farm. Mr. Richard Mawhood, architect, Chelmsford :—

W. Fincham	£750	Smith & Son	£718
Gowers	723	R. Wood, Writtle (accepted)	623

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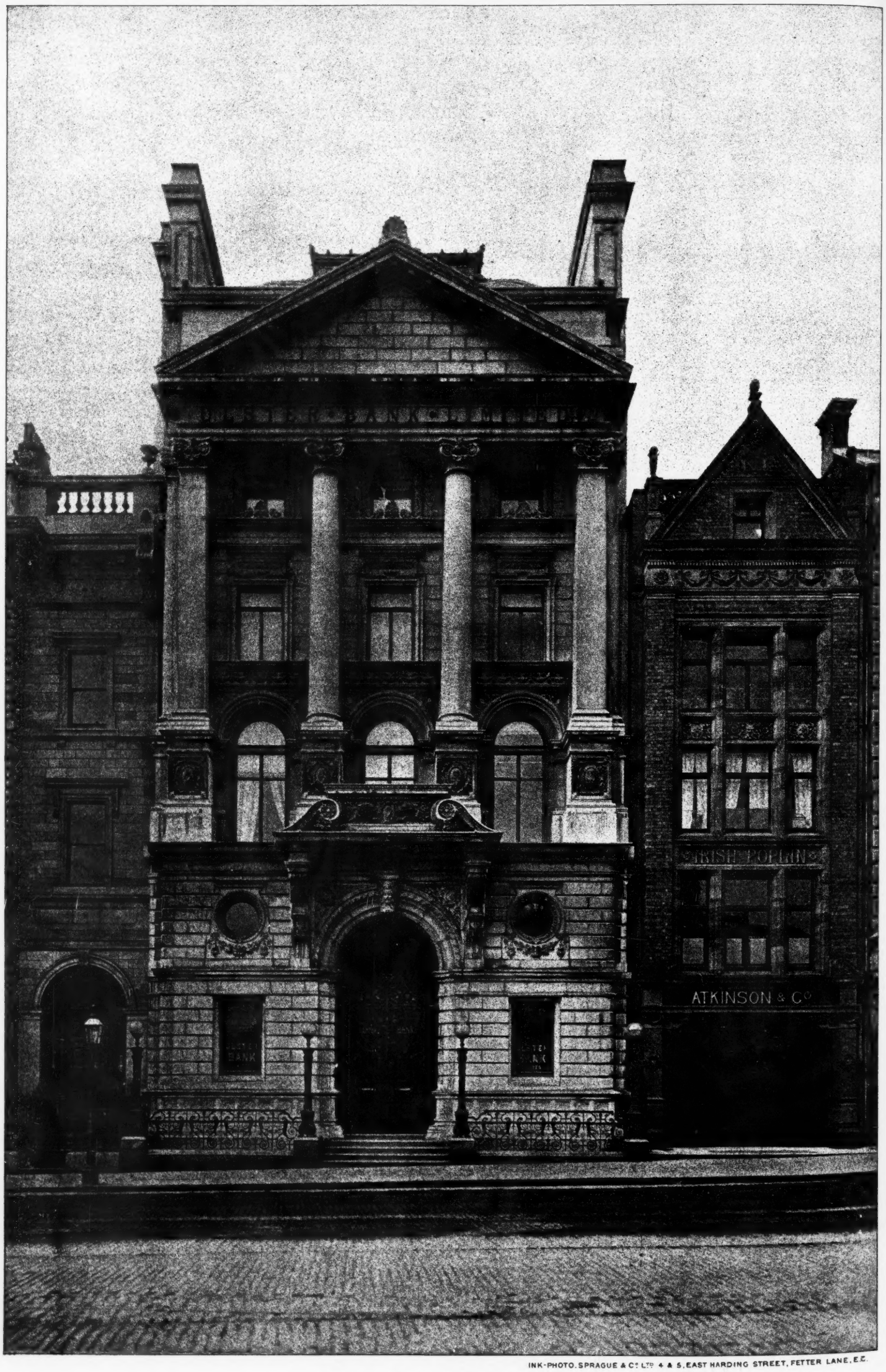

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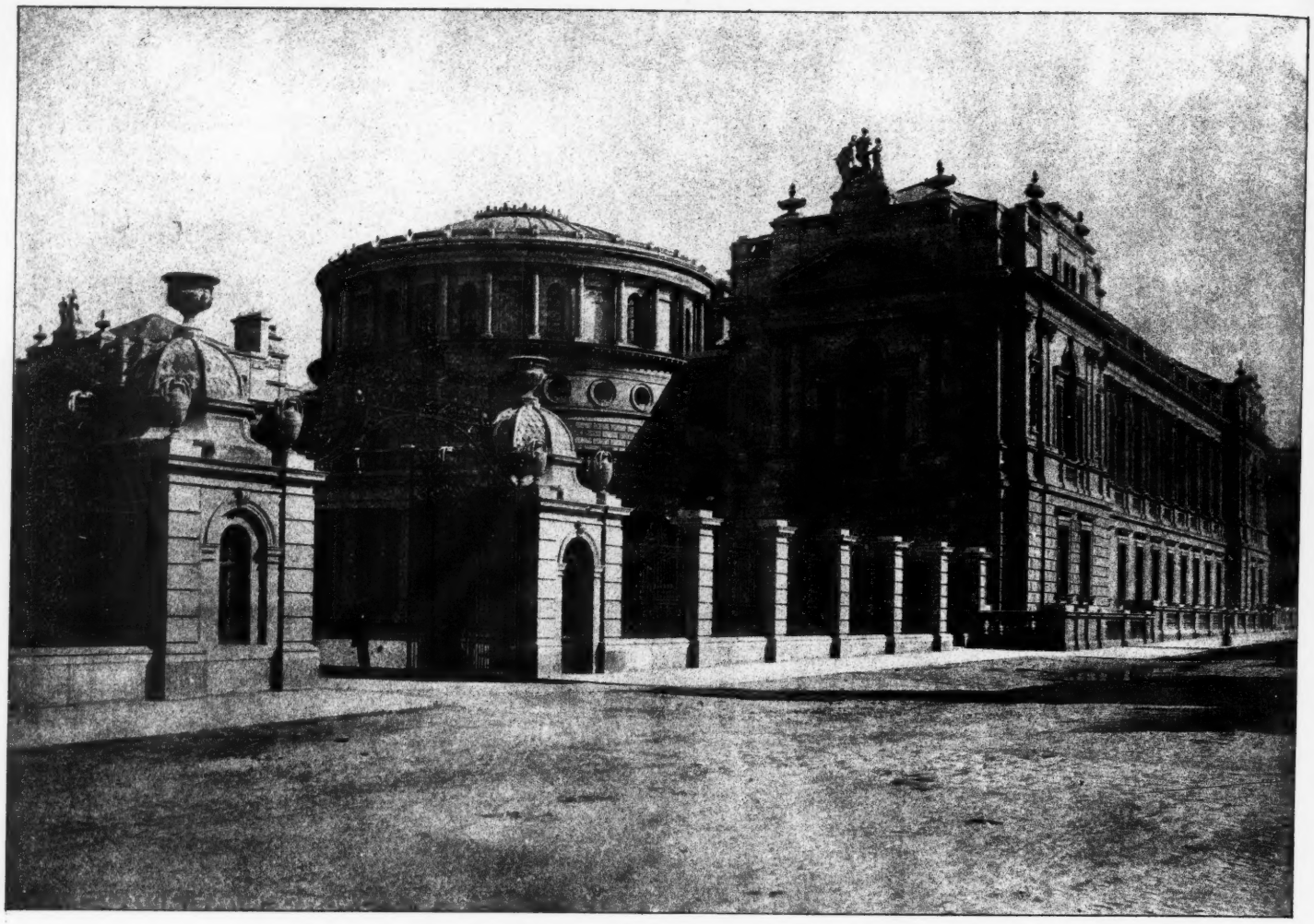

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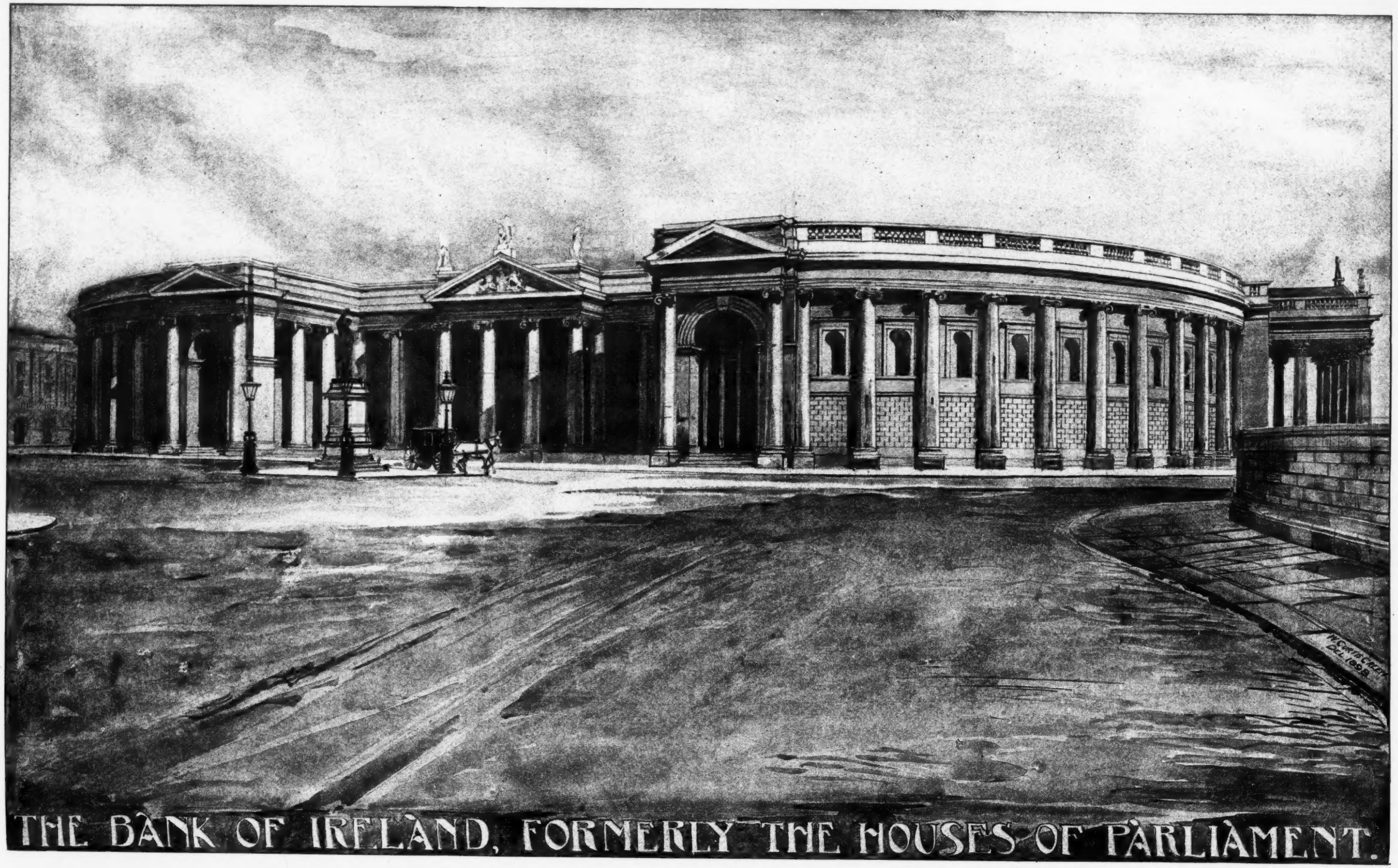

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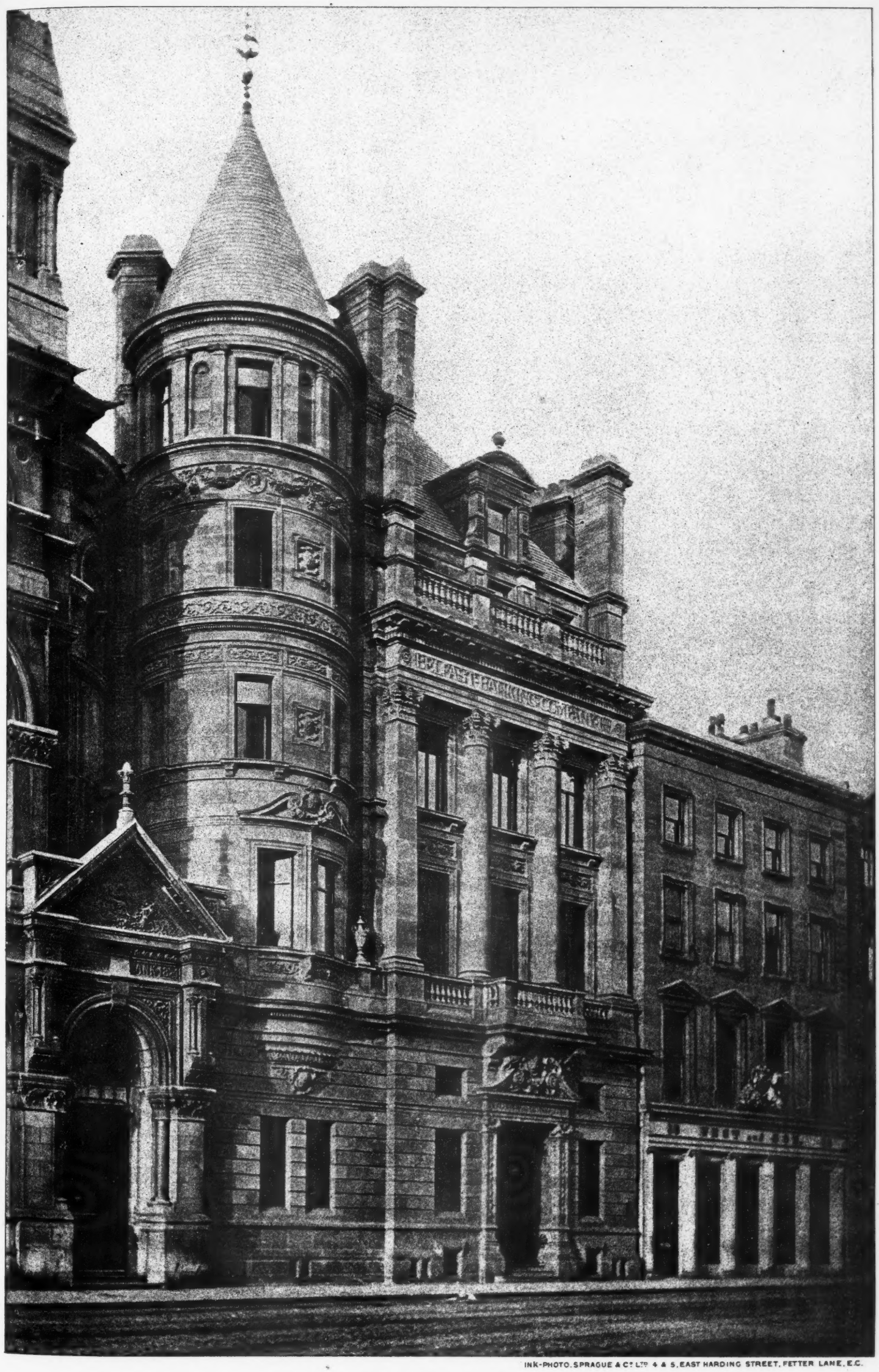

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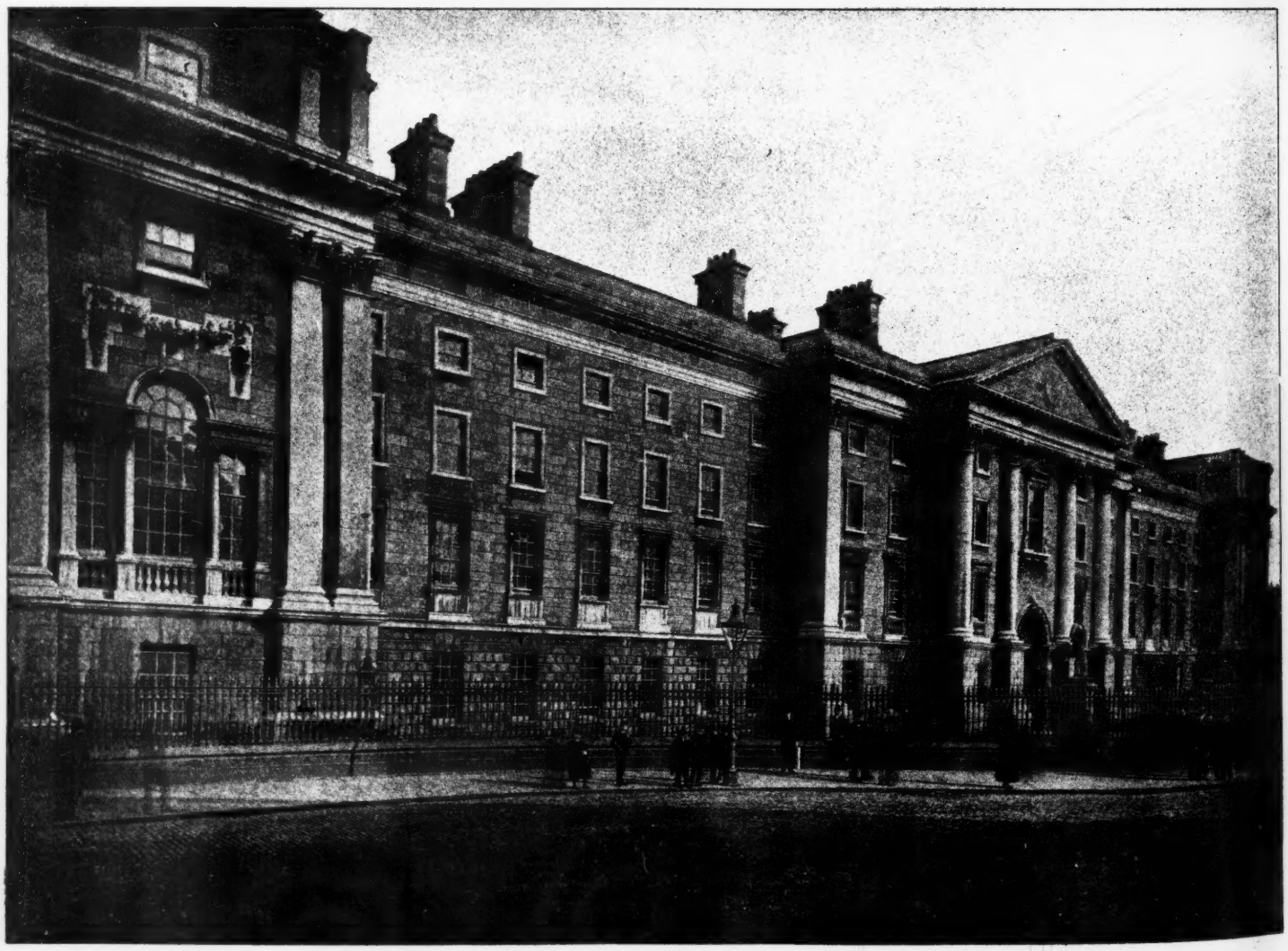

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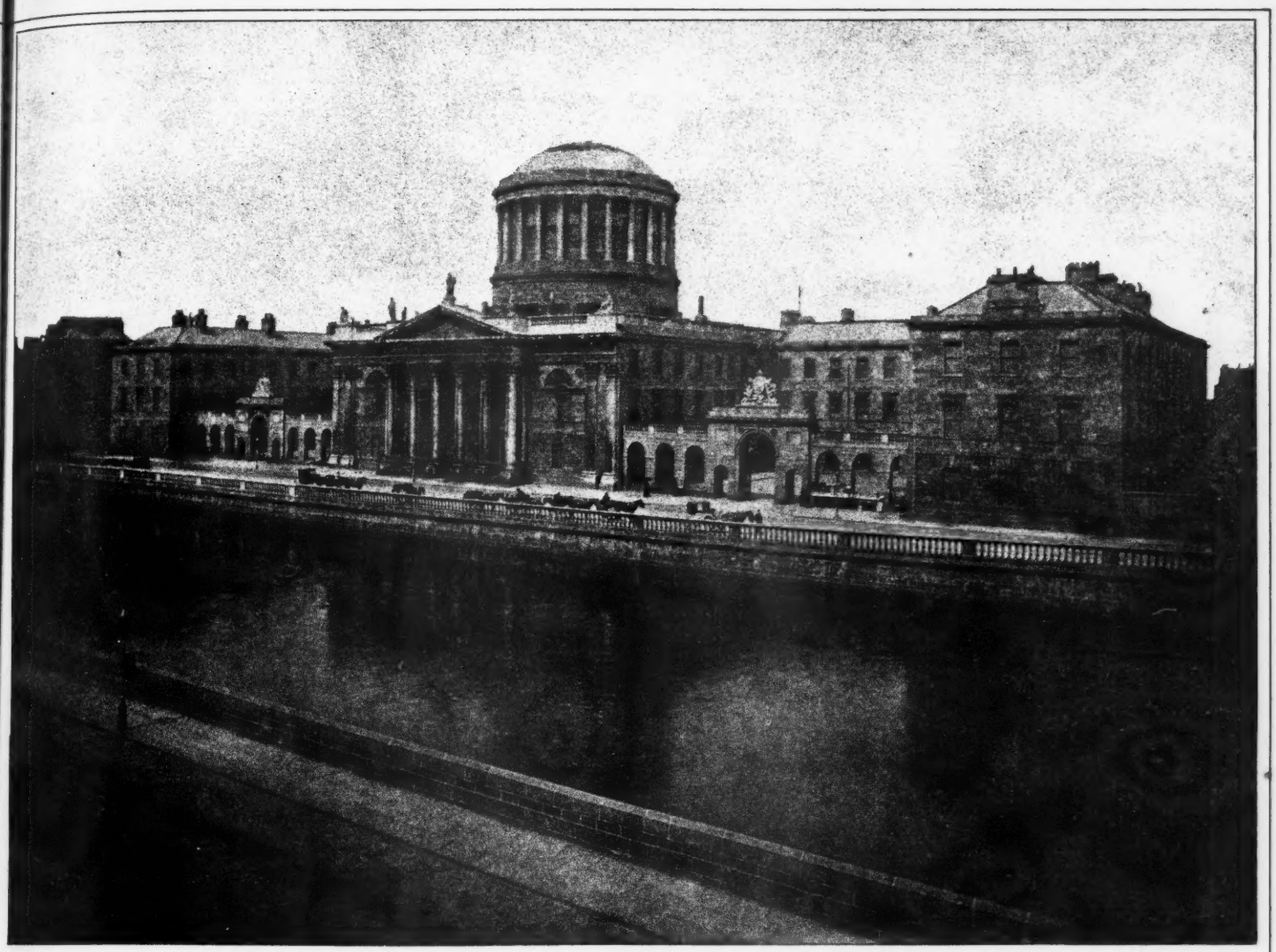

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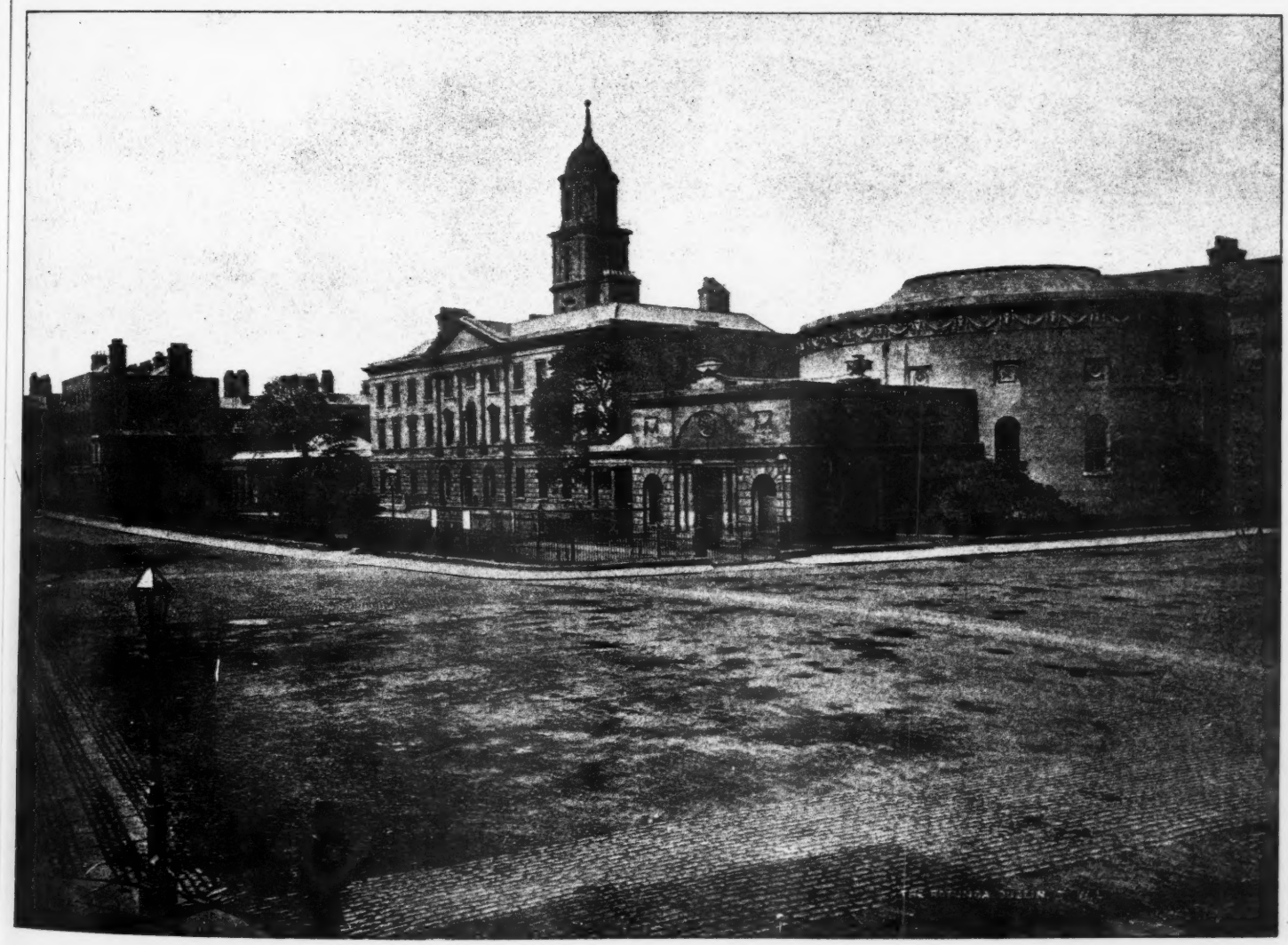

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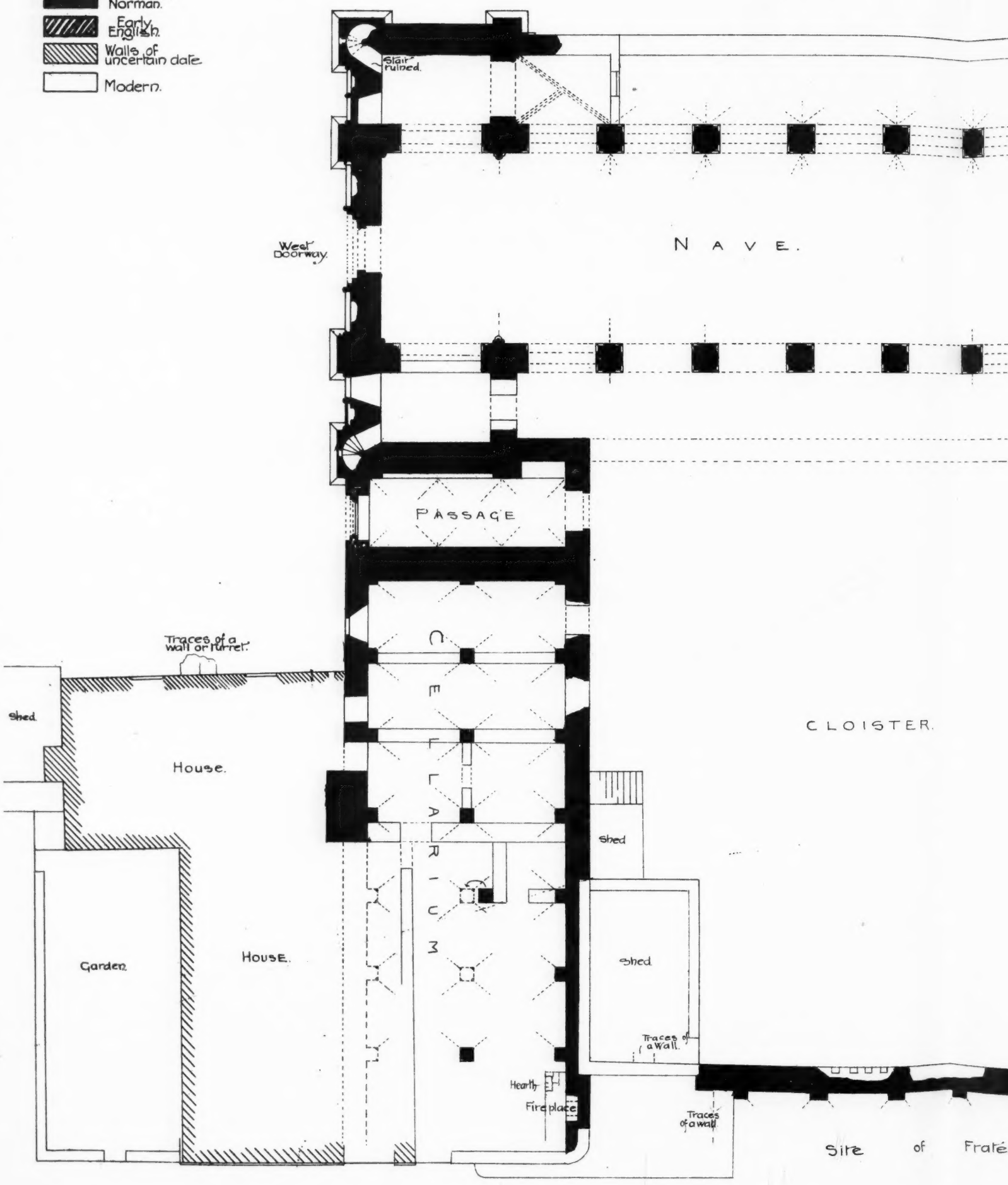

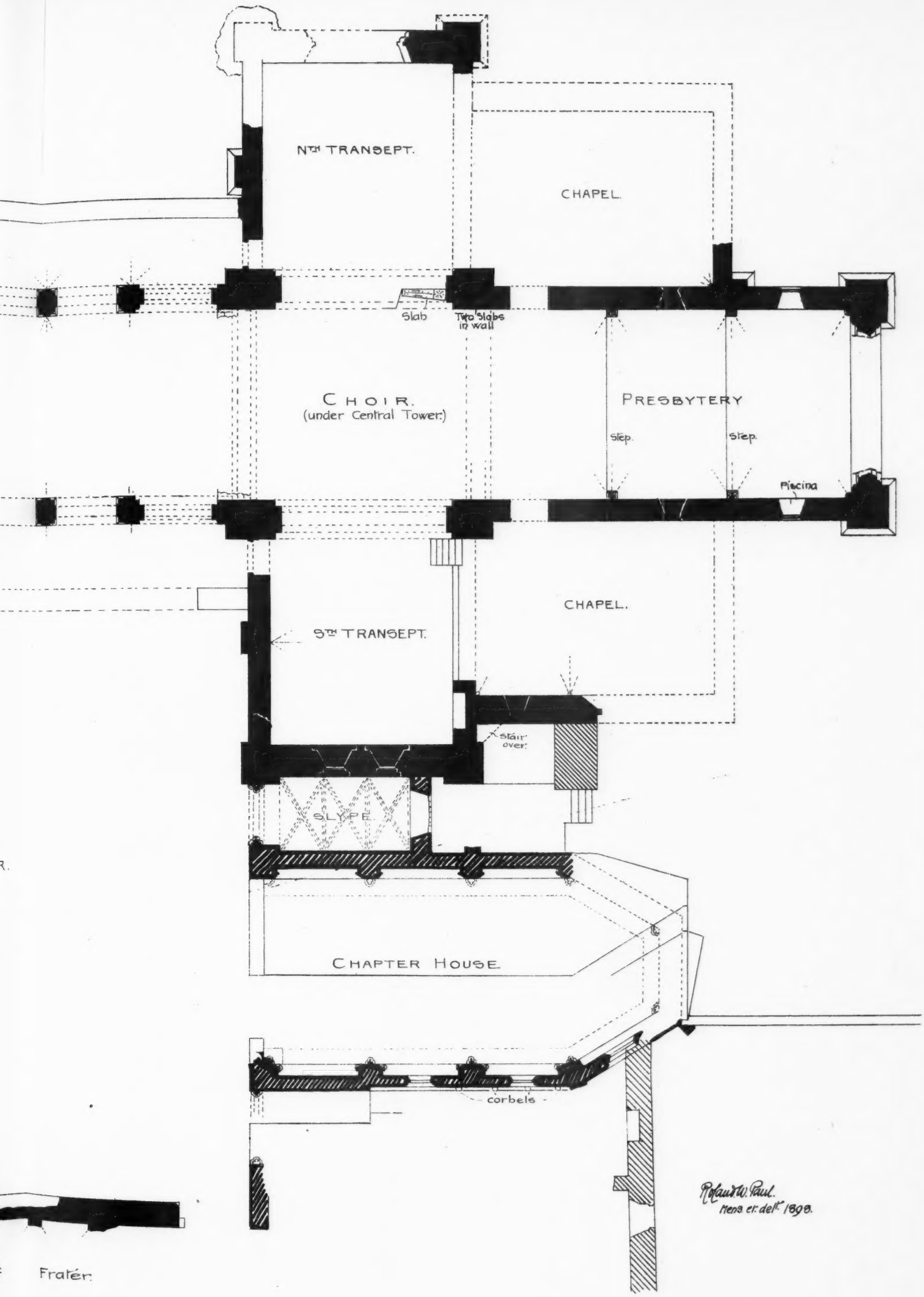

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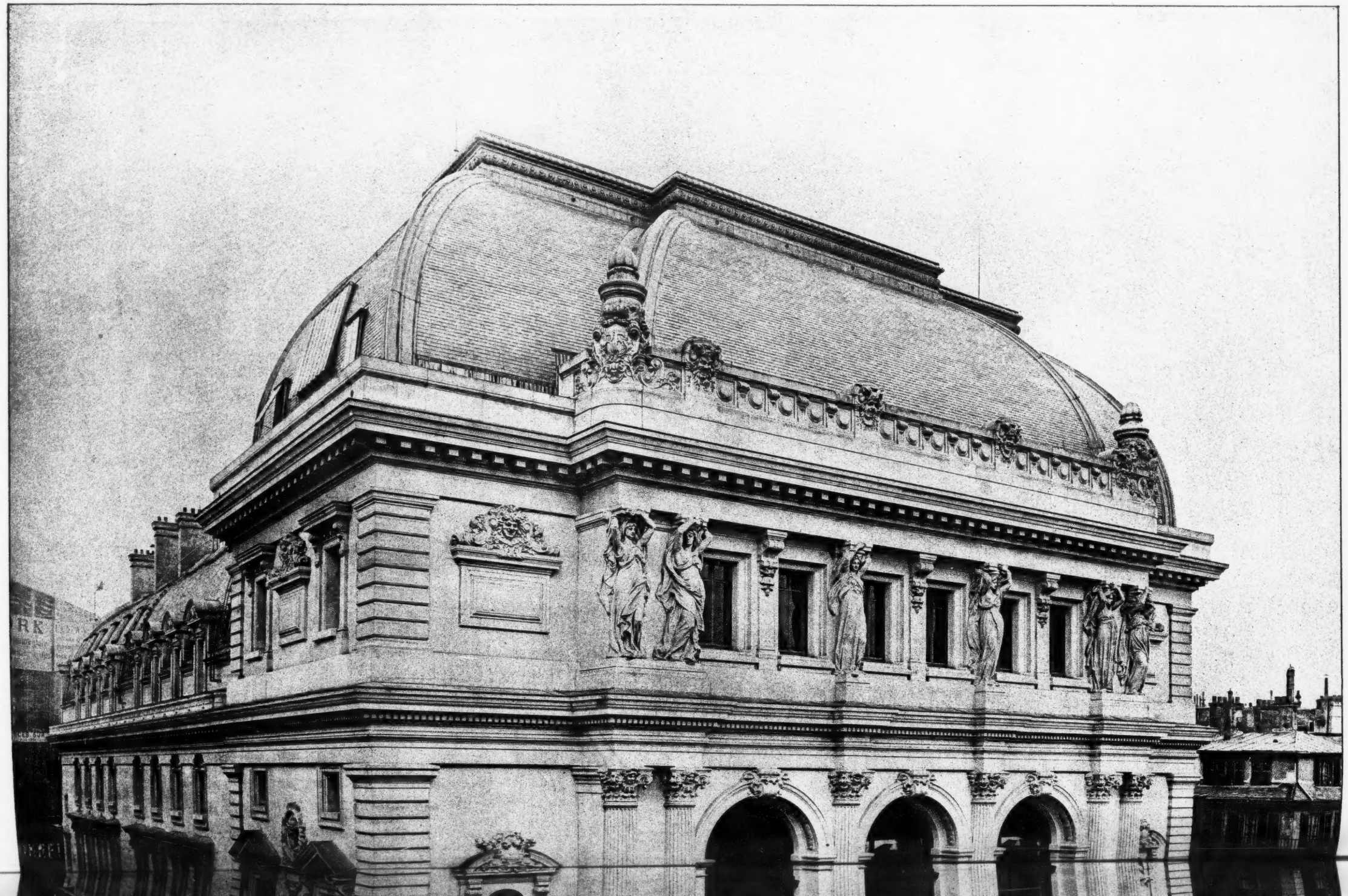

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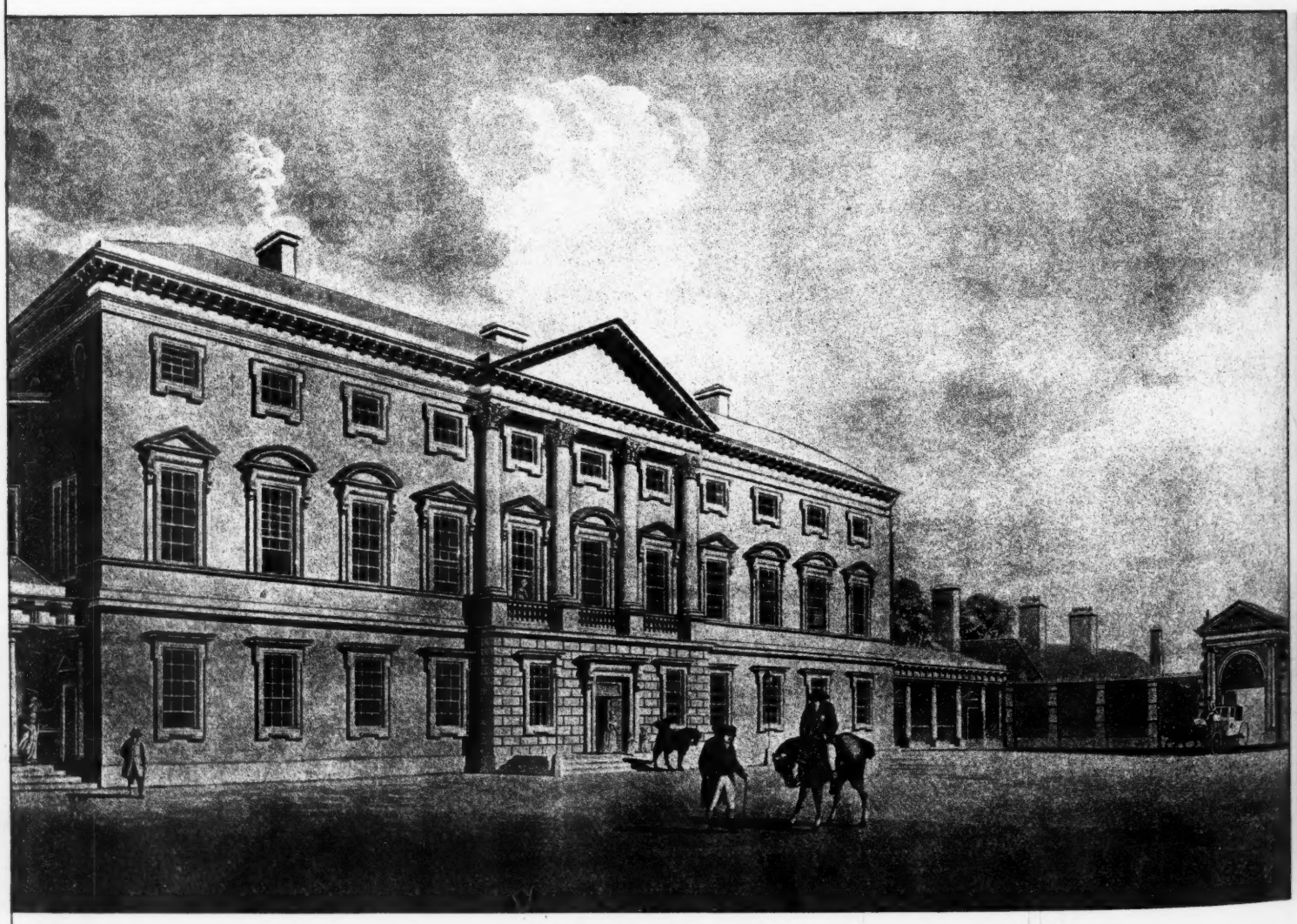

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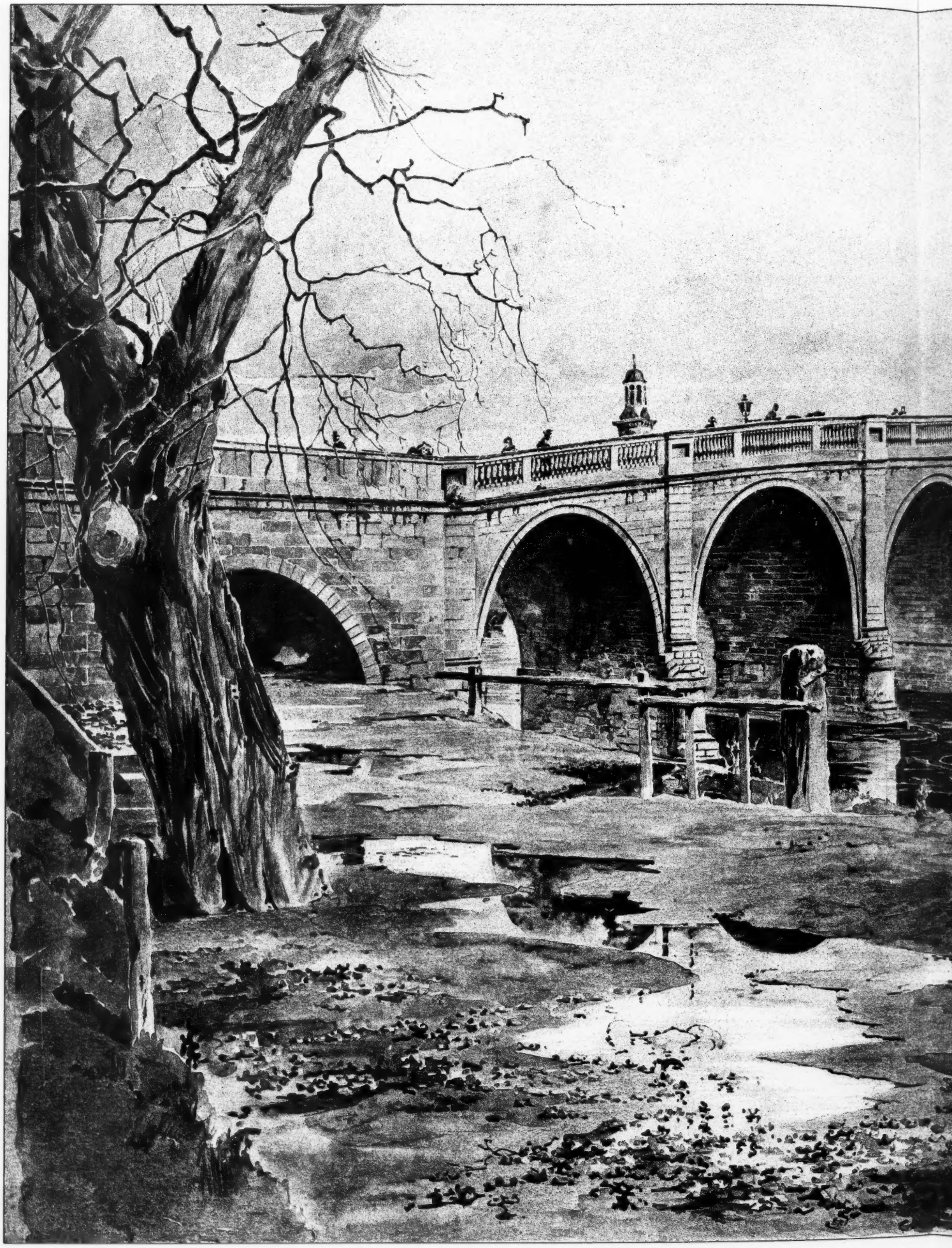

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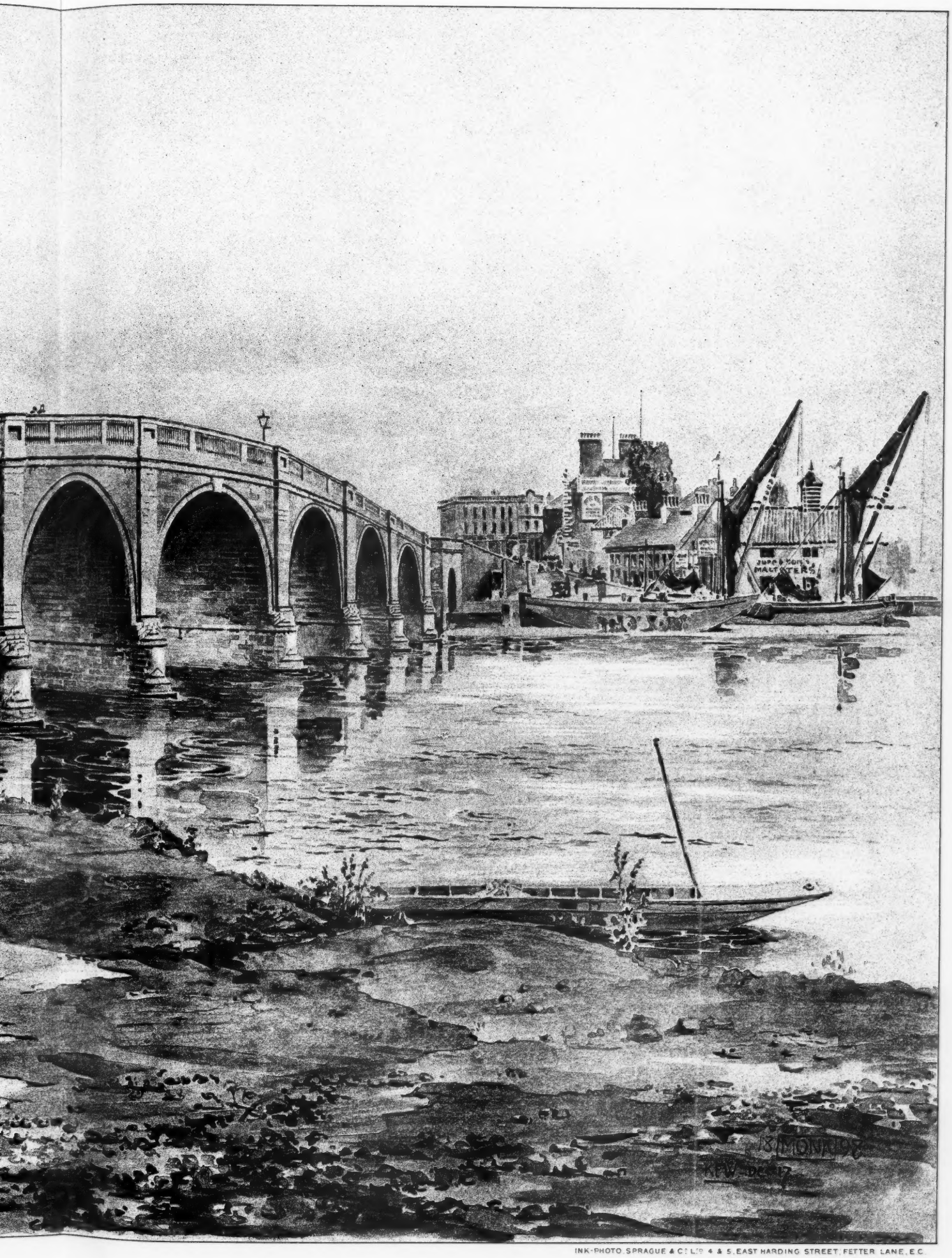

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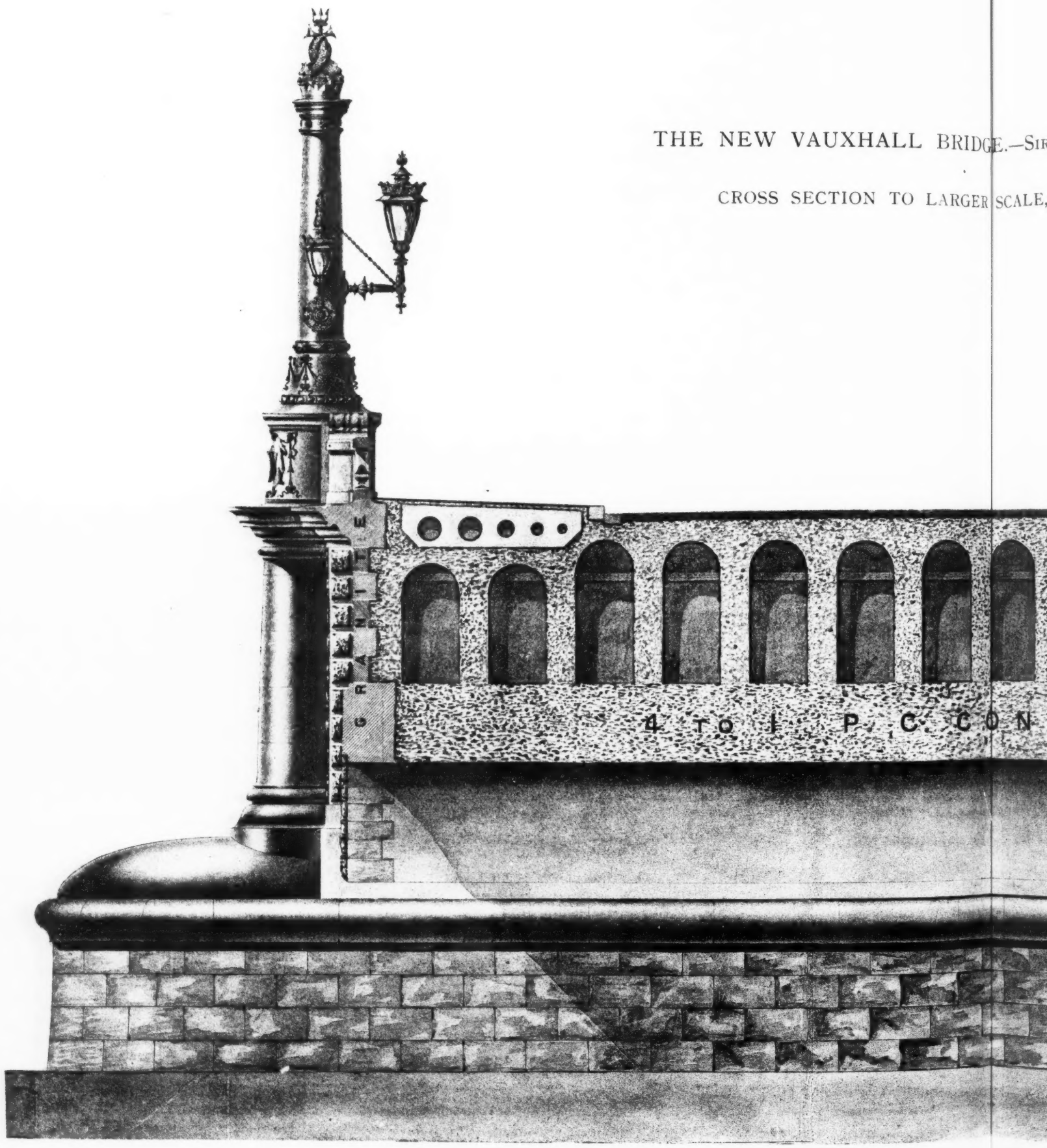

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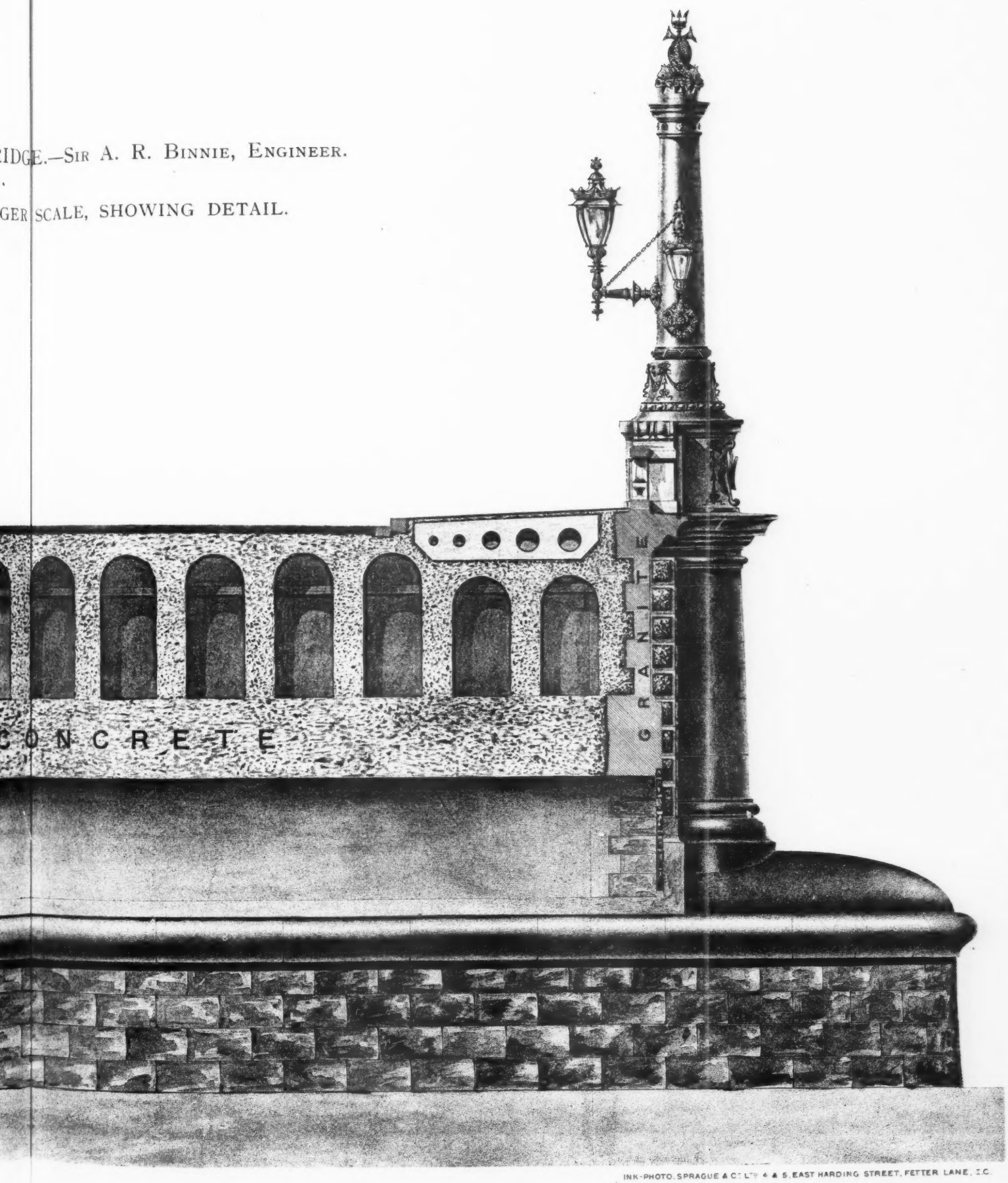

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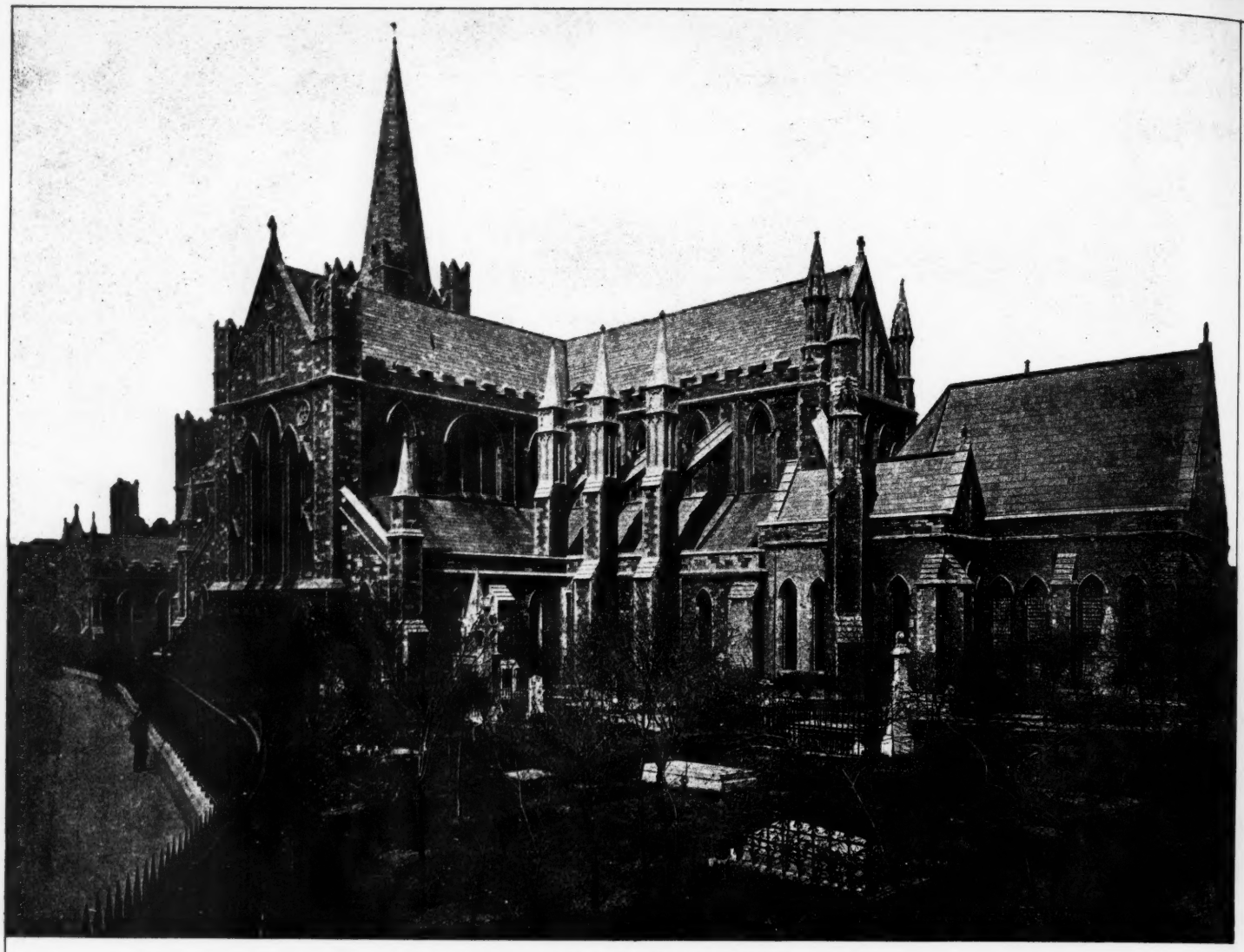

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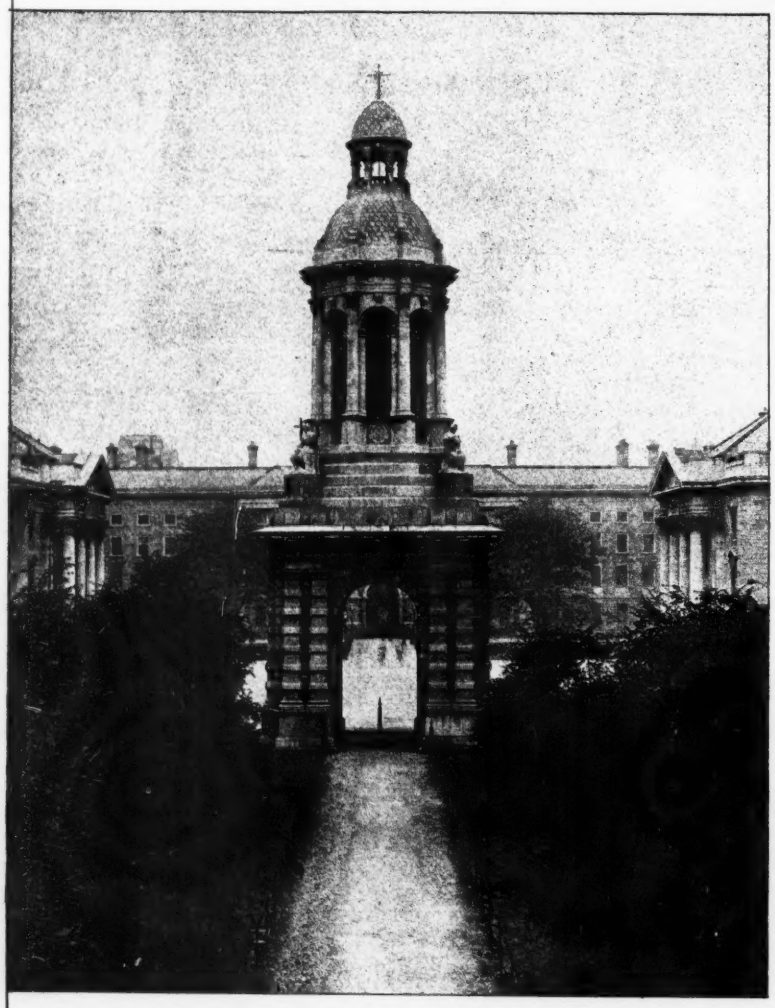

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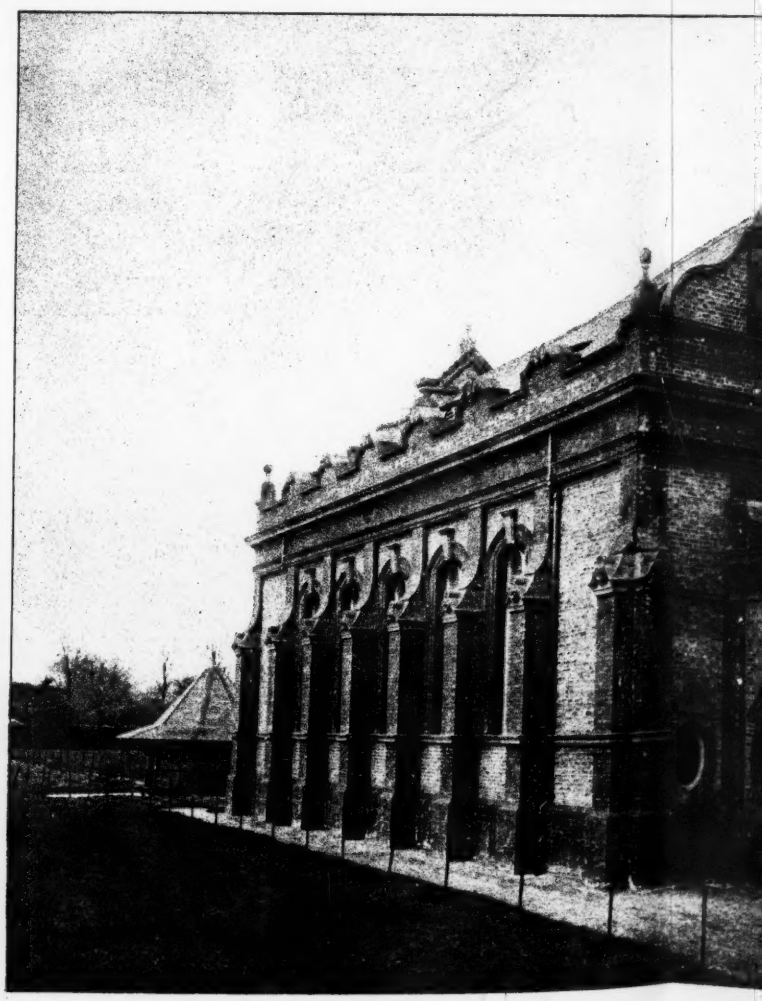

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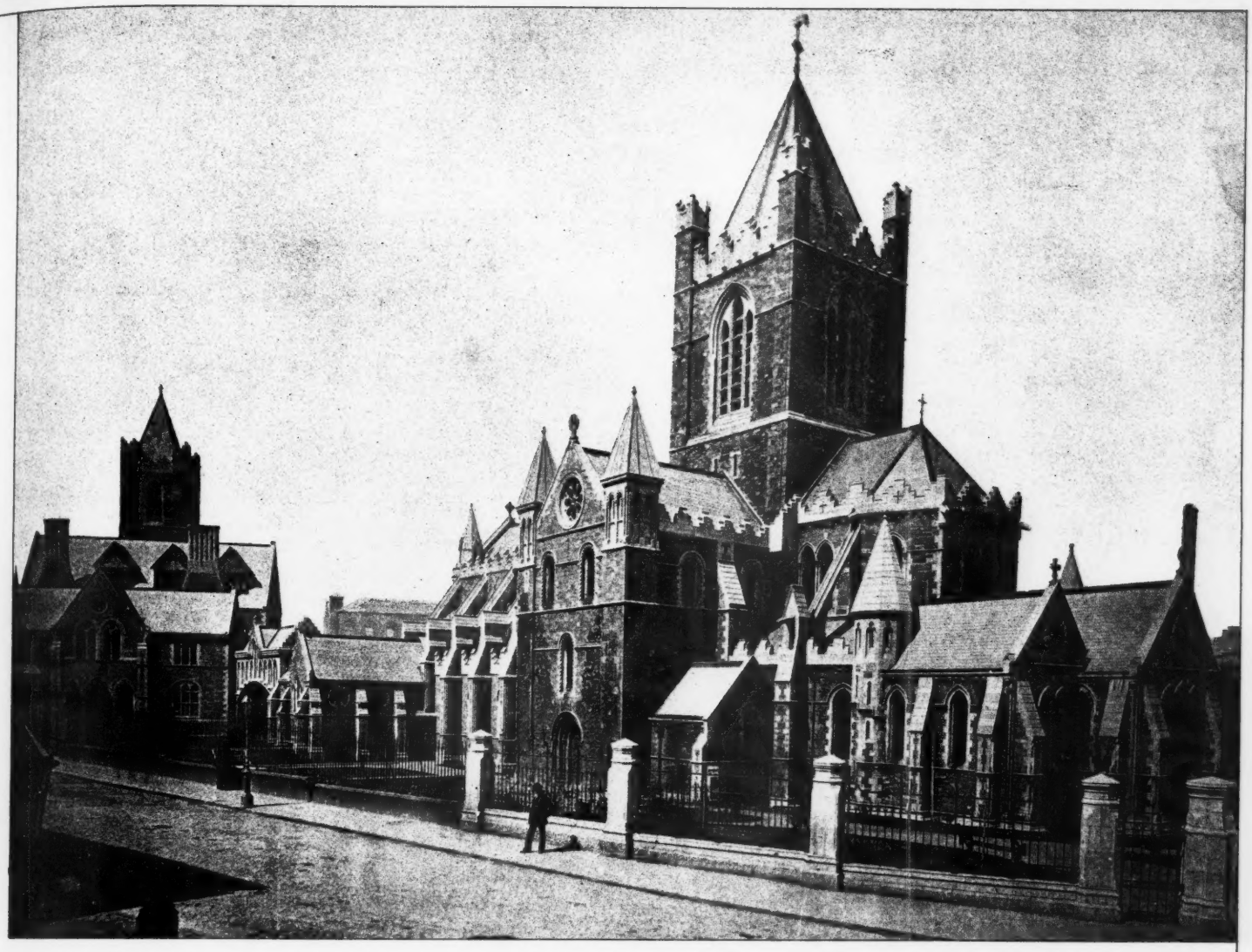

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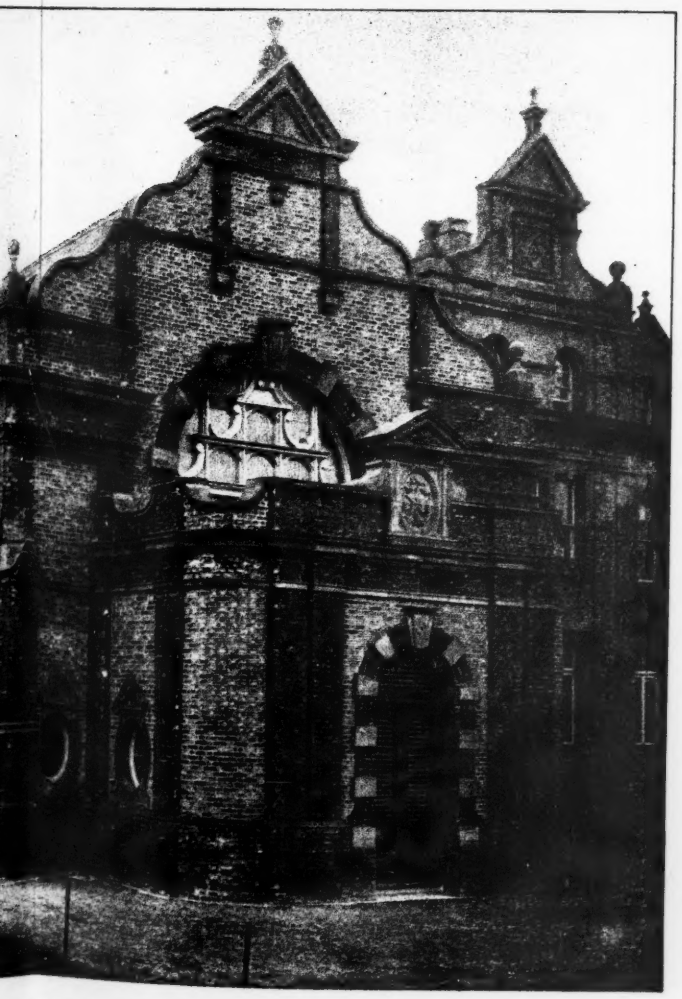

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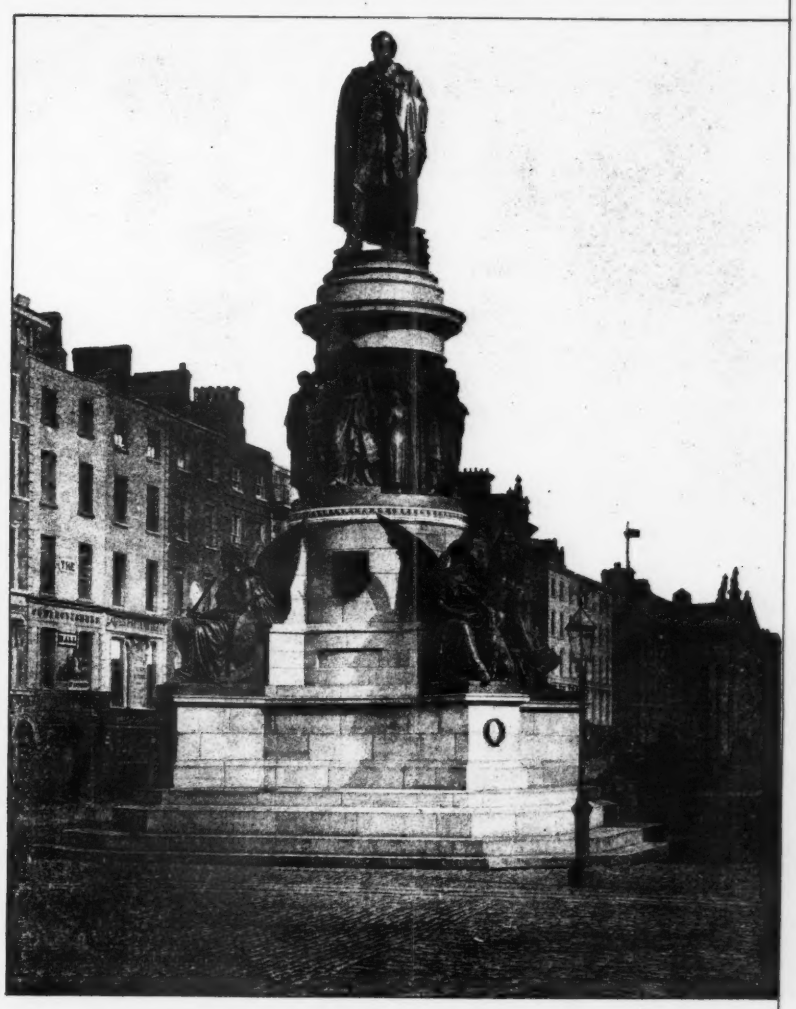

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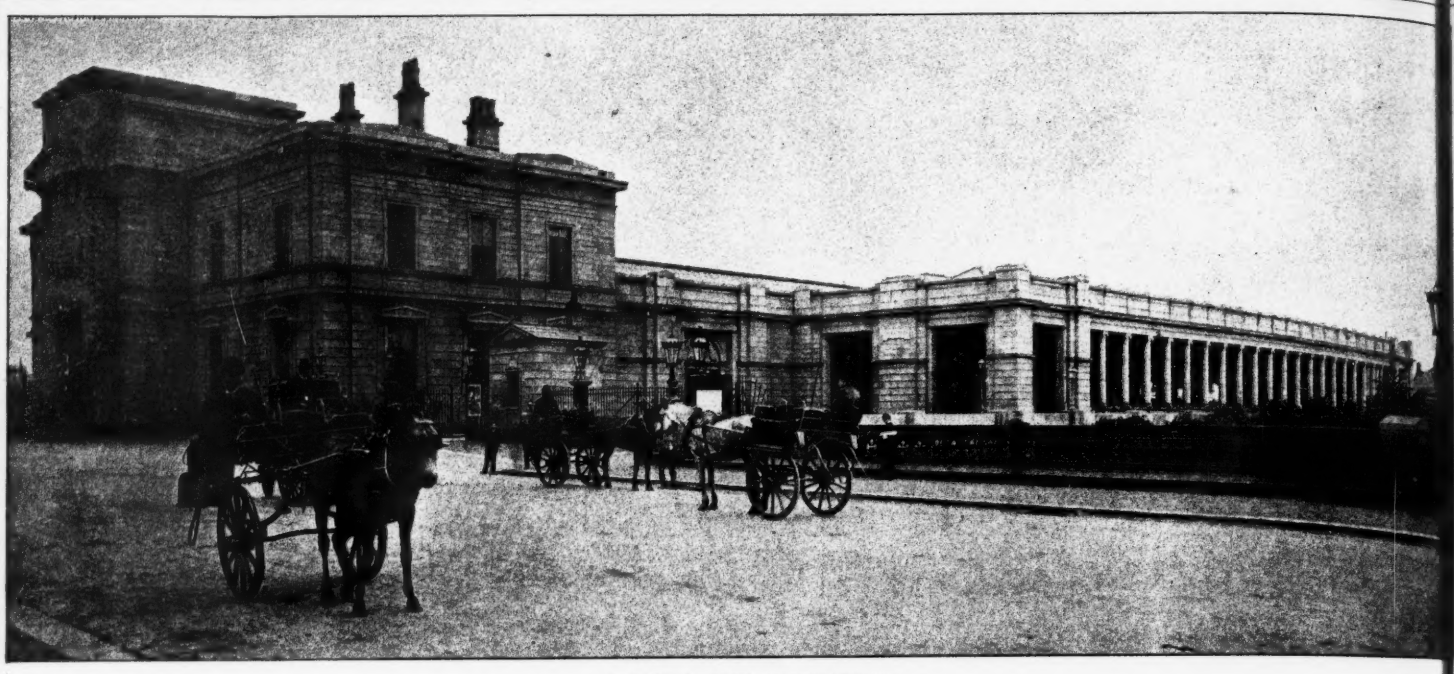

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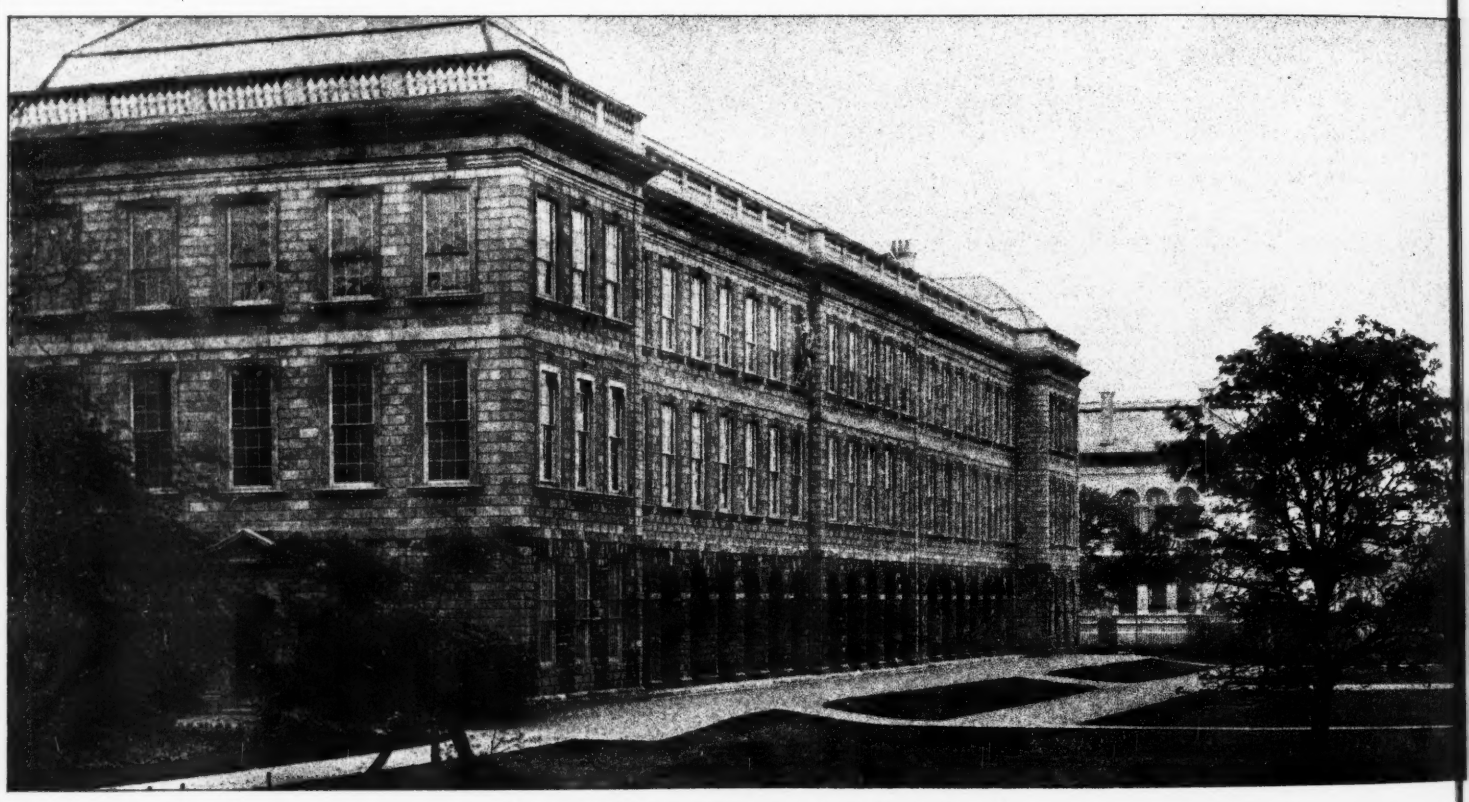

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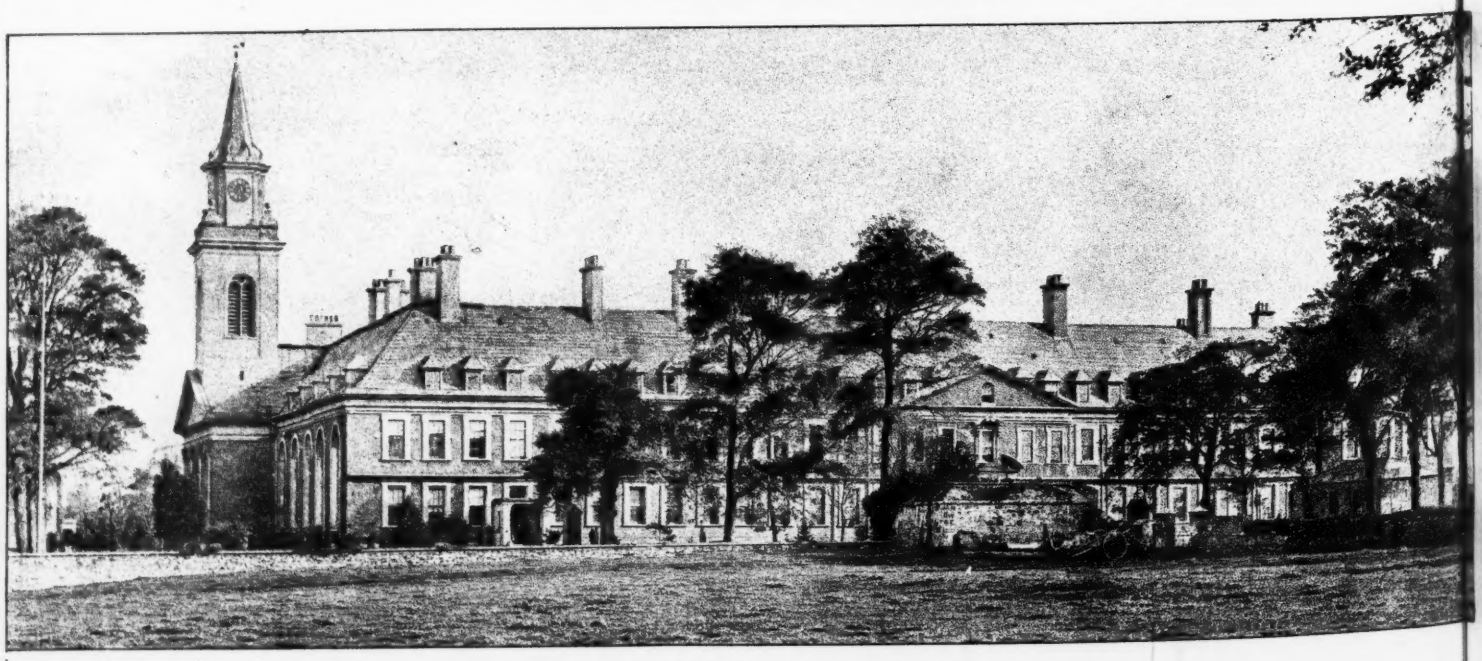
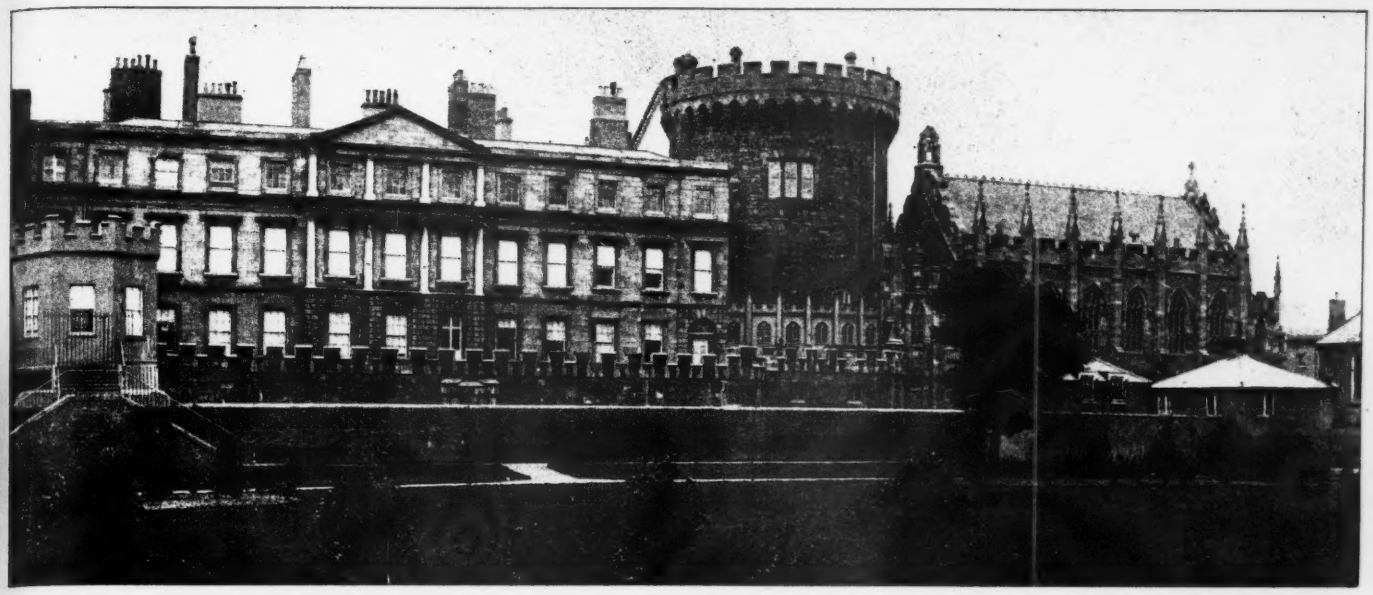
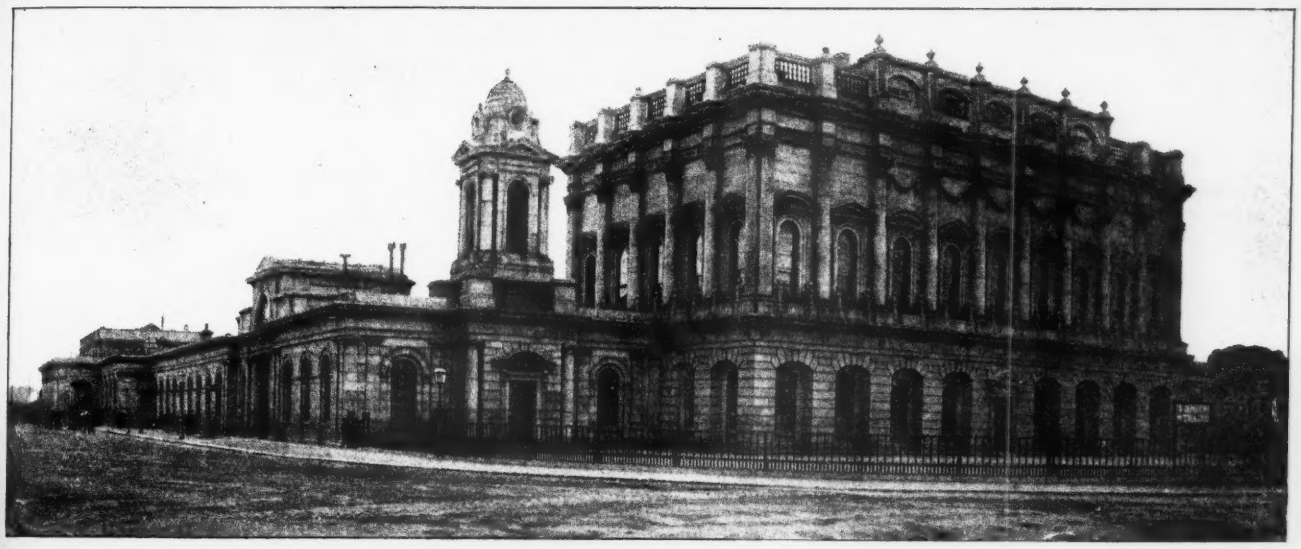


THE ROYAL HOSPITAL (SIR CHRISTOPHER WREN).

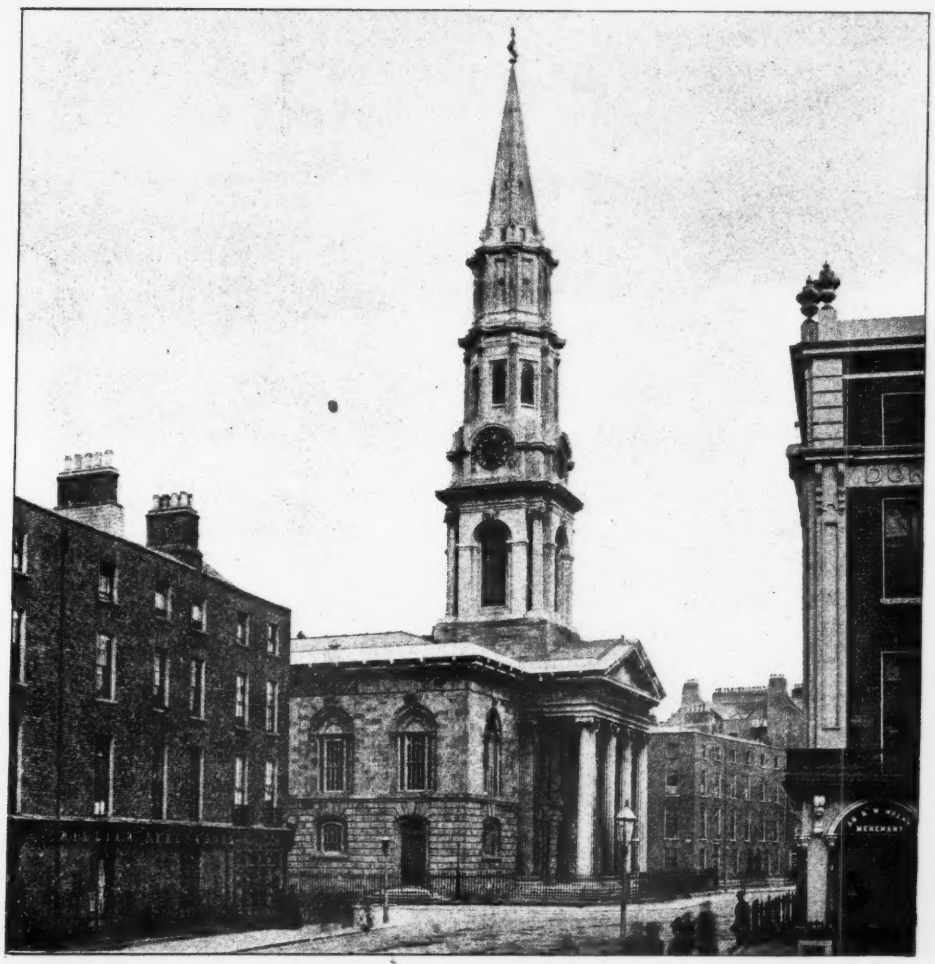


DUBLIN CASTLE.

THE CHAPEL ROYAL (F. JOHNSTON).



KING'S BRIDGE STATION (SANCTON WOOD).



ST. GEORGE'S CHURCH (F. JOHNSTON).

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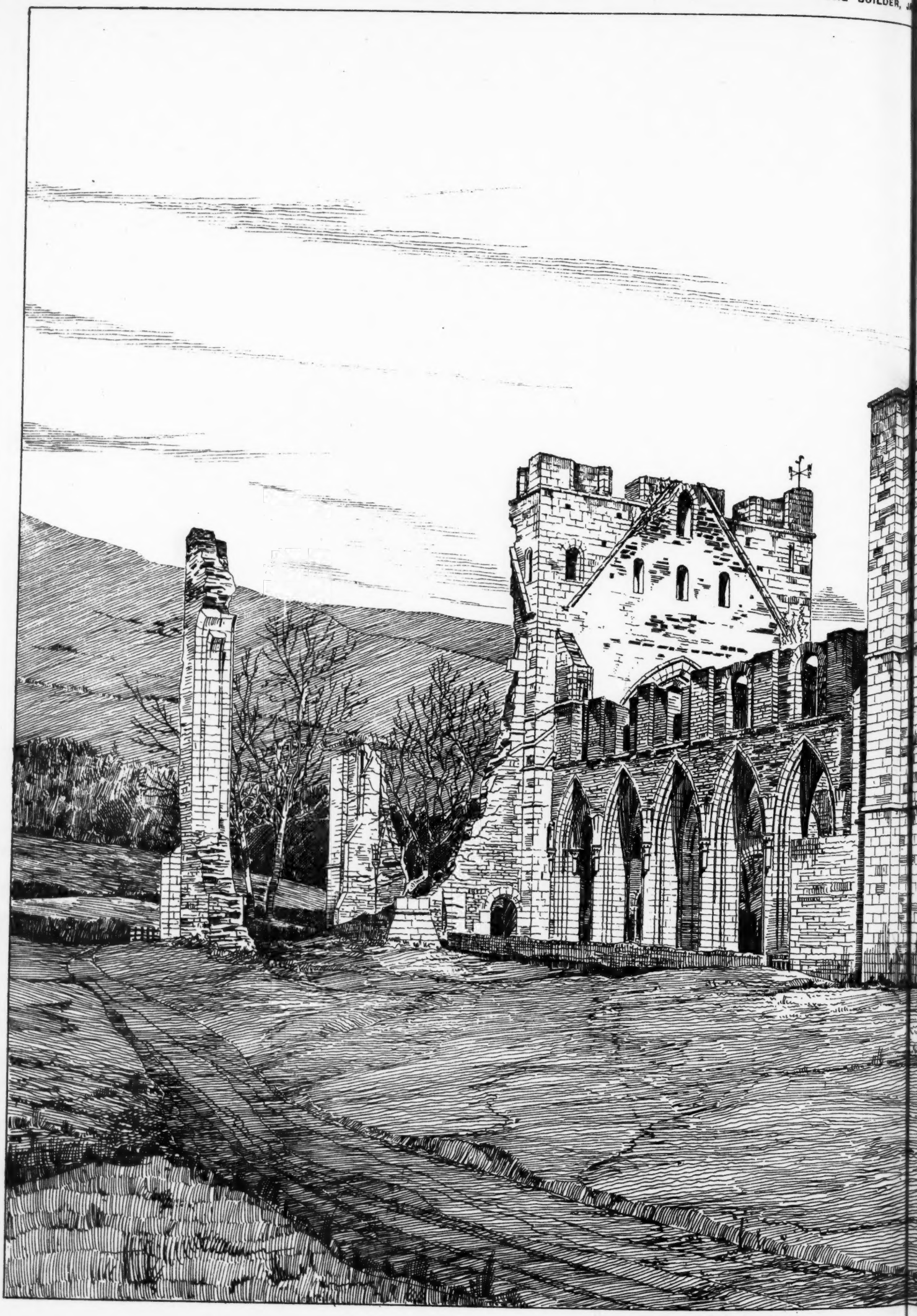

THE ABBEYS OF GREAT BRITAIN. N

DRAWN BY MR. ROLAND W. P

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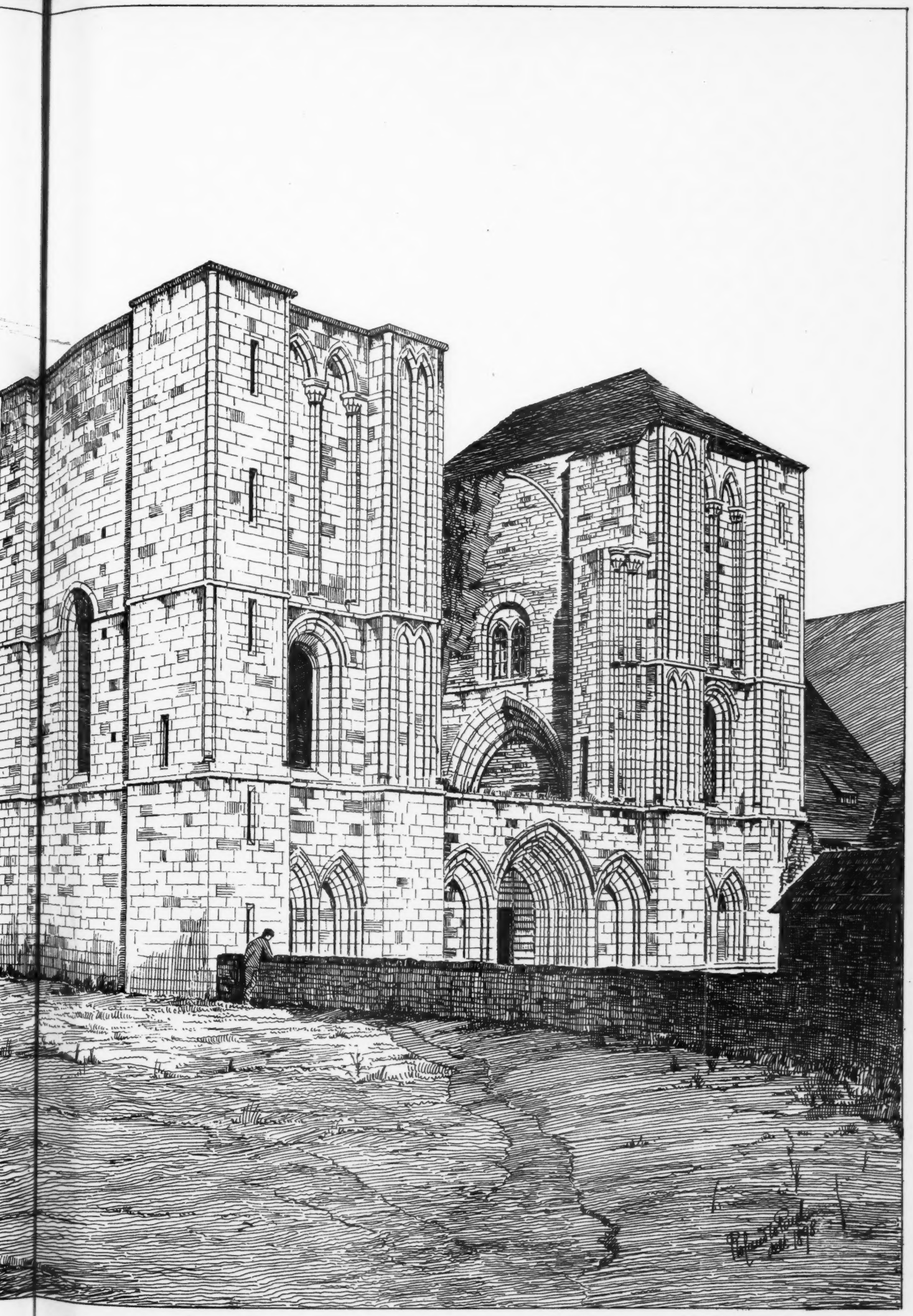

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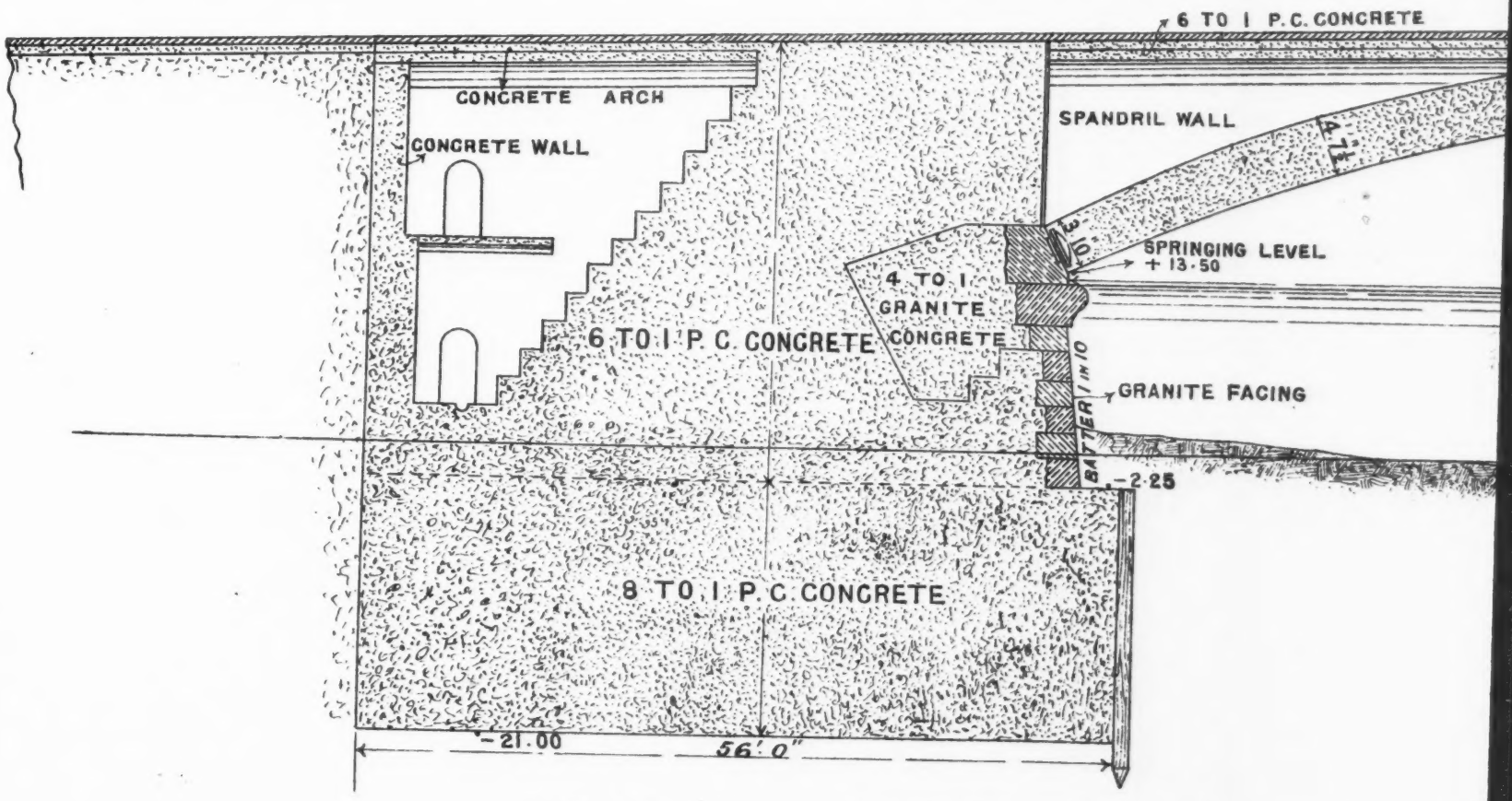
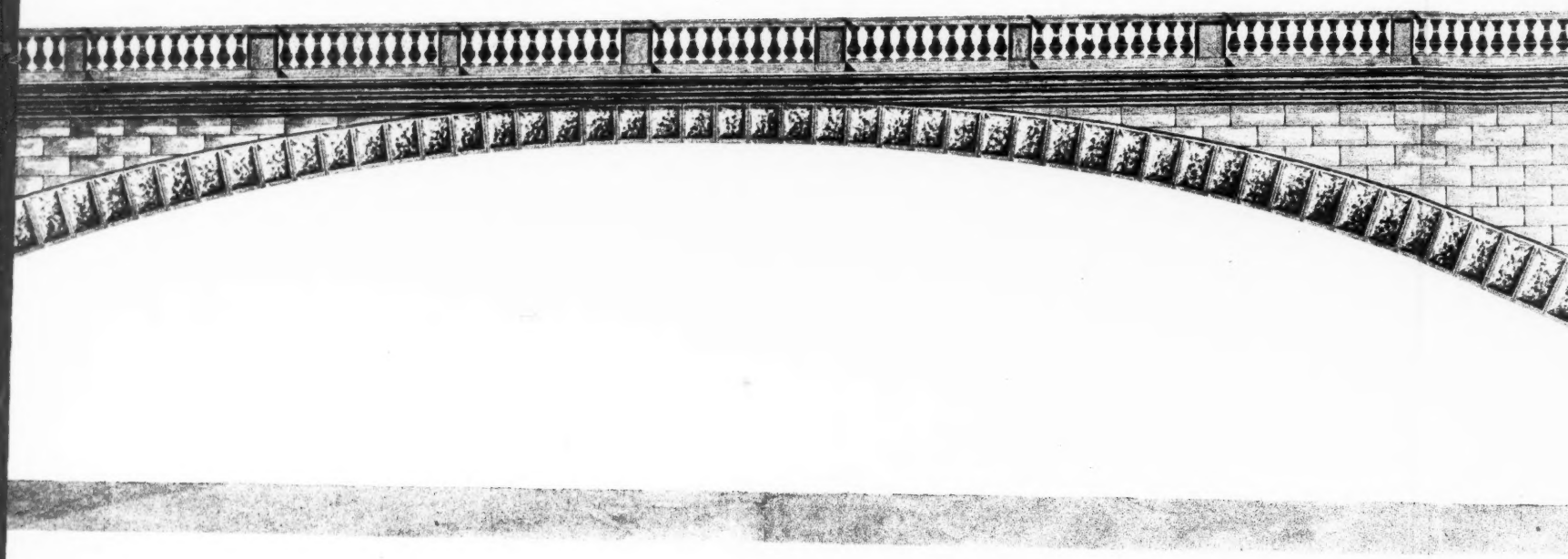
BRITAIN. No. 28. LLANTHONY.

MR. ROLAND W PAUL.

GRADIENT



Half Longitudinal Section o



GRADIENT 1 IN 42

I P.C. CONCRETE

WOOD PAVING

8 TO 1

8 TO 1

4 TO 1 GRANITE CONCRETE

+32·50

SPANDRI

SHORE SPAN

130′ 6¾″

NG LEVEL

T. H. W. + 12·50

FACING

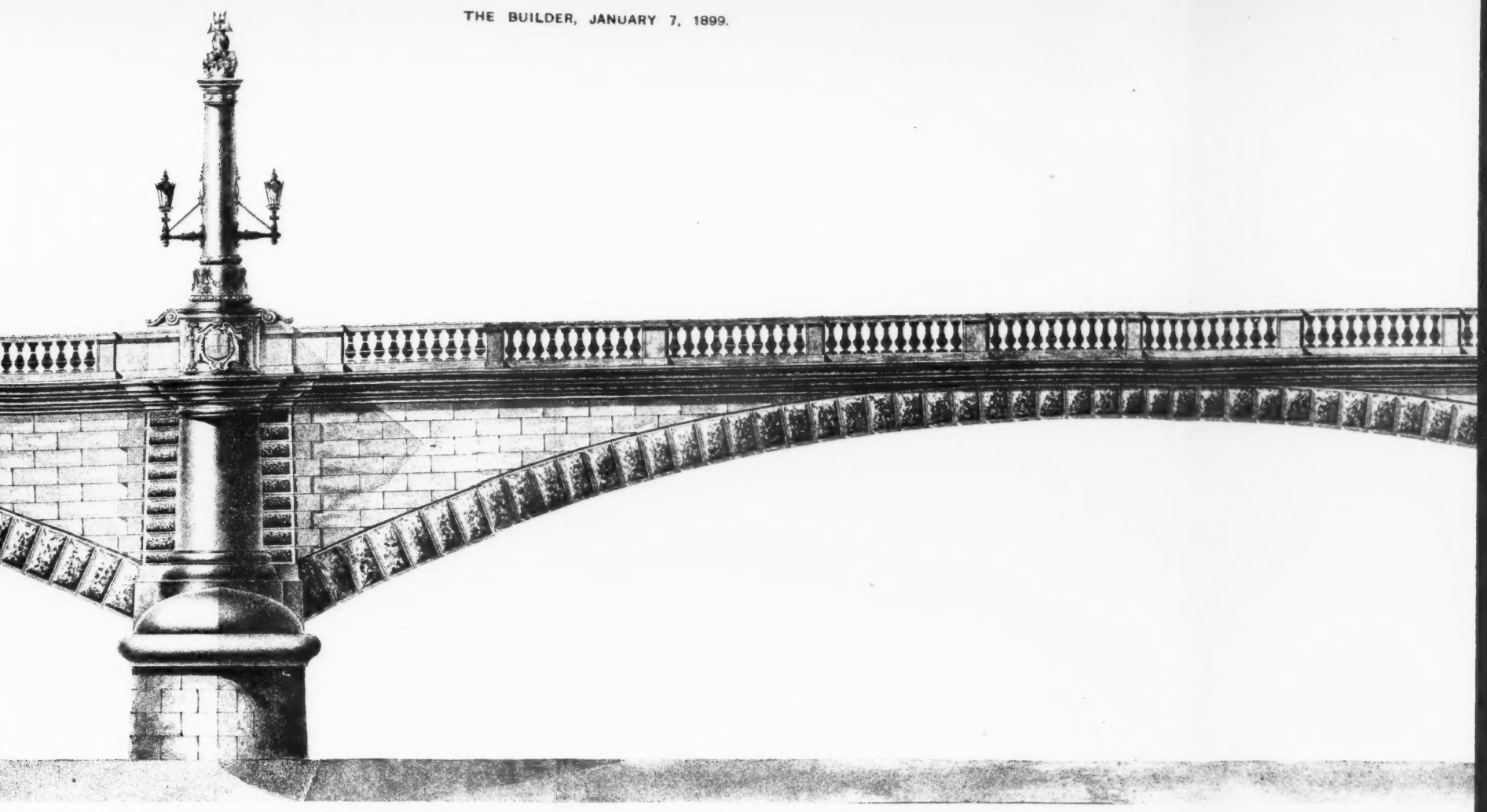
ORDNANCE DATUM

B E D O F

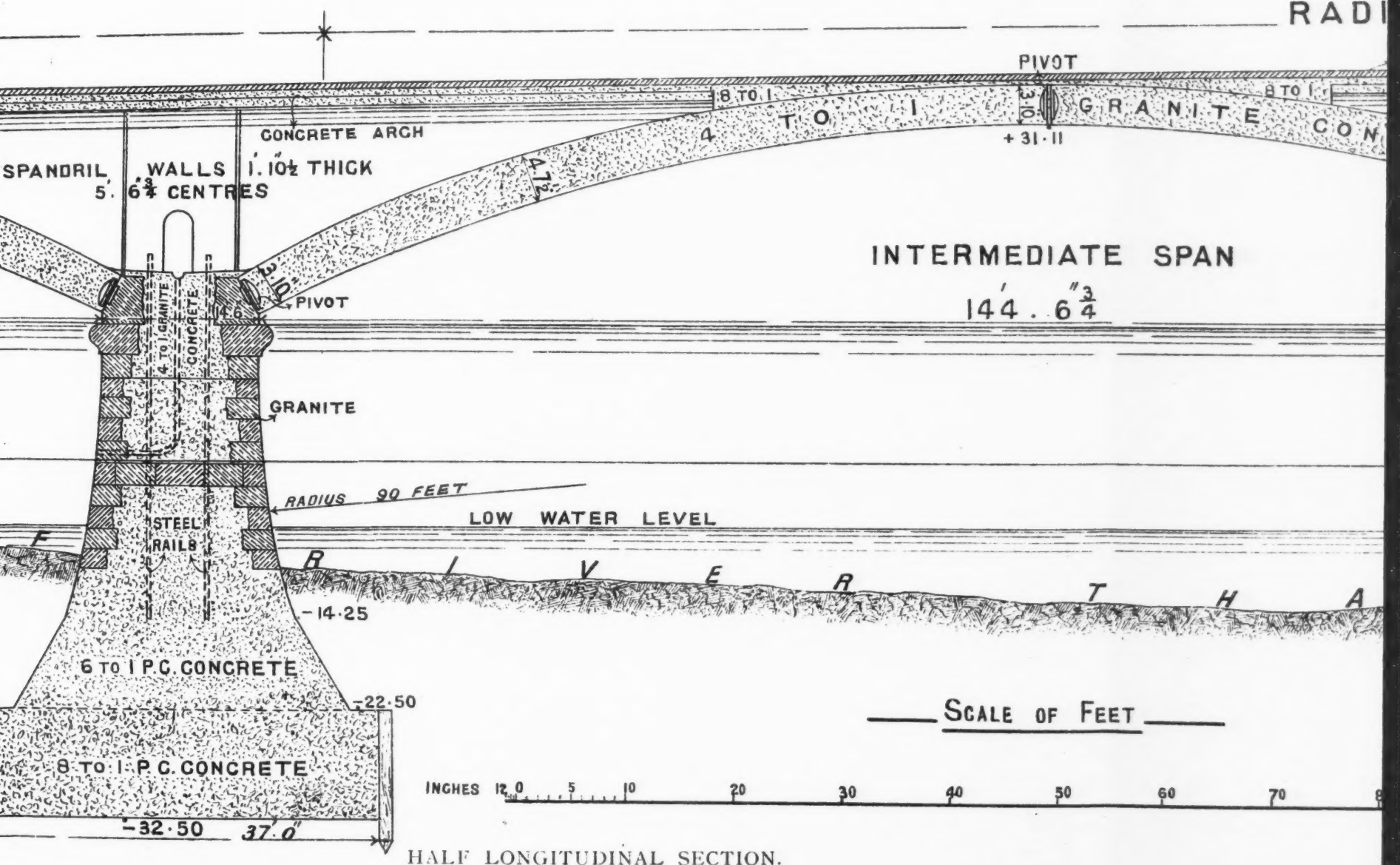
6 T

8 TO

ction on Centre line of Bridge

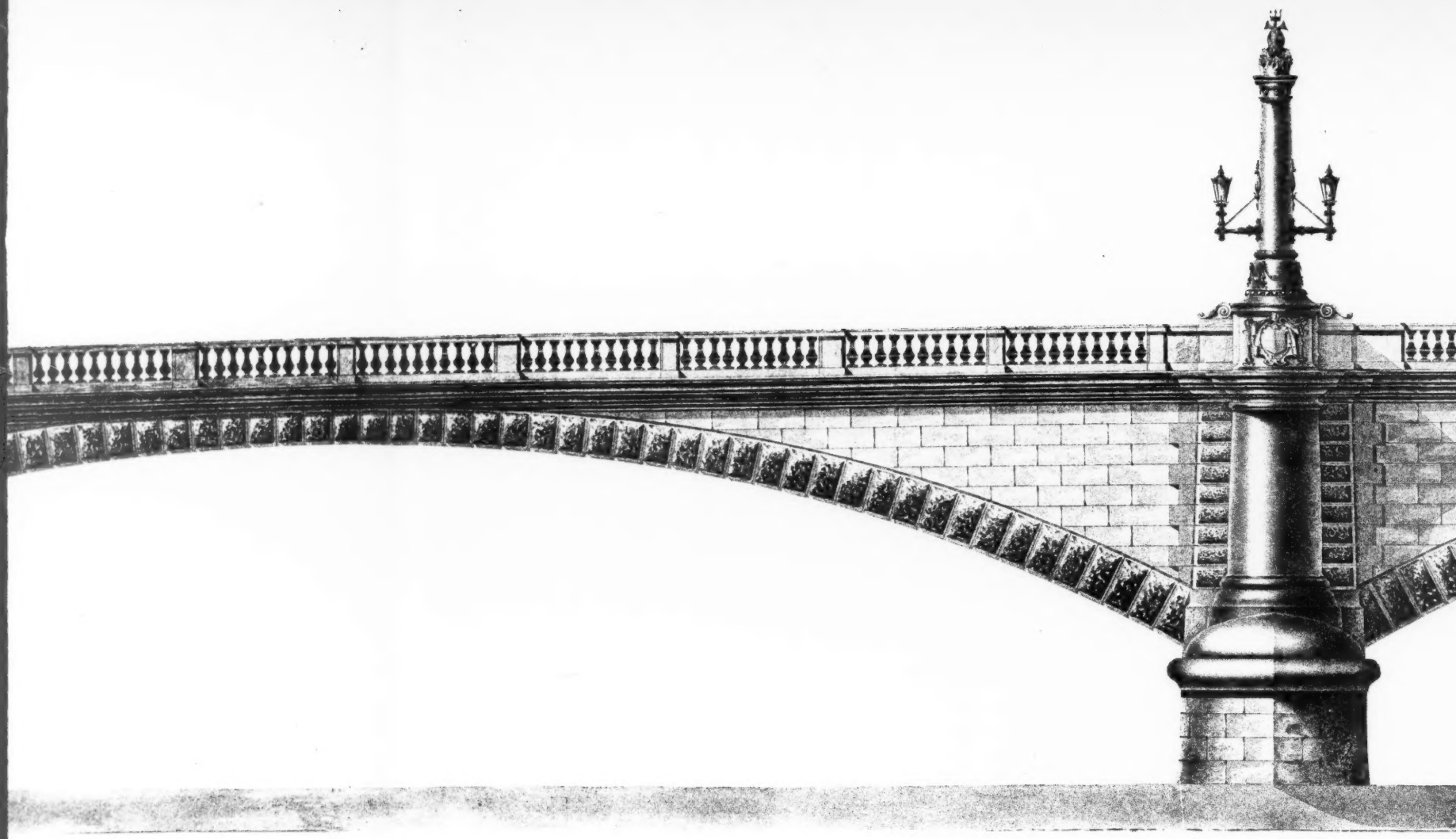


HALF ELEVATION.



HALF LONGITUDINAL SECTION.

THE NEW VAUXHALL BRIDGE.—Sir A. R. Binnie, Engineer.



RADIUS 9557 FEET

PIVOT

WOOD PAVING

8 TO 1

3'-0"

+31·11

TO 1

GRANITE CONCRETE

6 TO 1 P.C. CONCRETE

½" EXPANSION

INTERMEDIATE SPAN

144'. 6¾"

4 TO 1 GRANITE CONCRETE

GRANITE F

THAMES

6 TO 1 P.C. CONCRETE

8 TO 1 P.C. CONCRETE

32·50

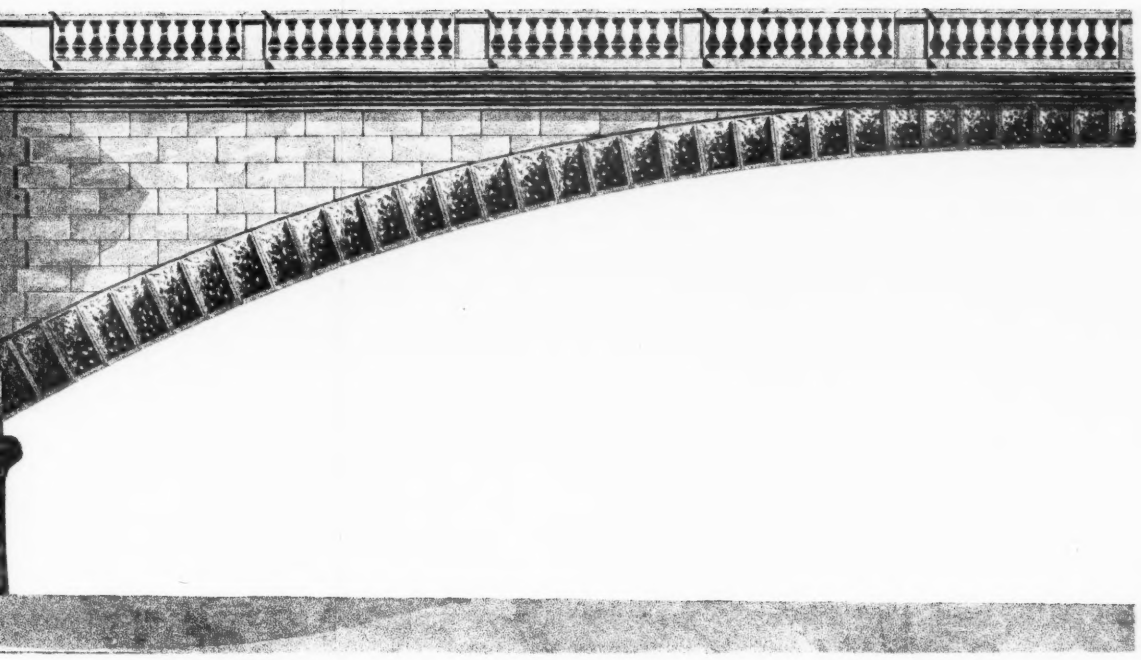
38·0

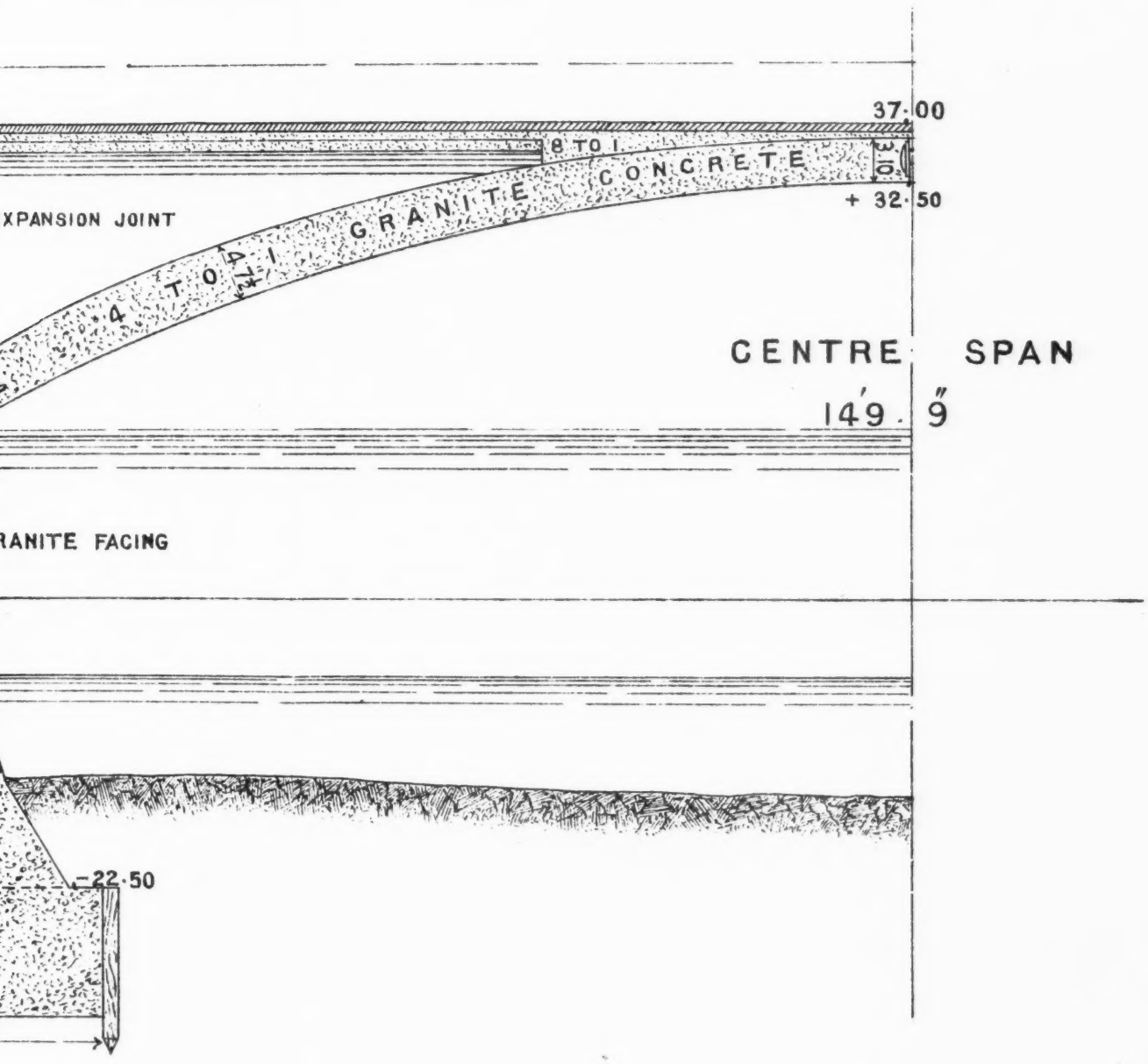
SCALE OF FEET

30 40 50 60 70 80 90 100 FEET

ON.

BINNIE, ENGINEER.





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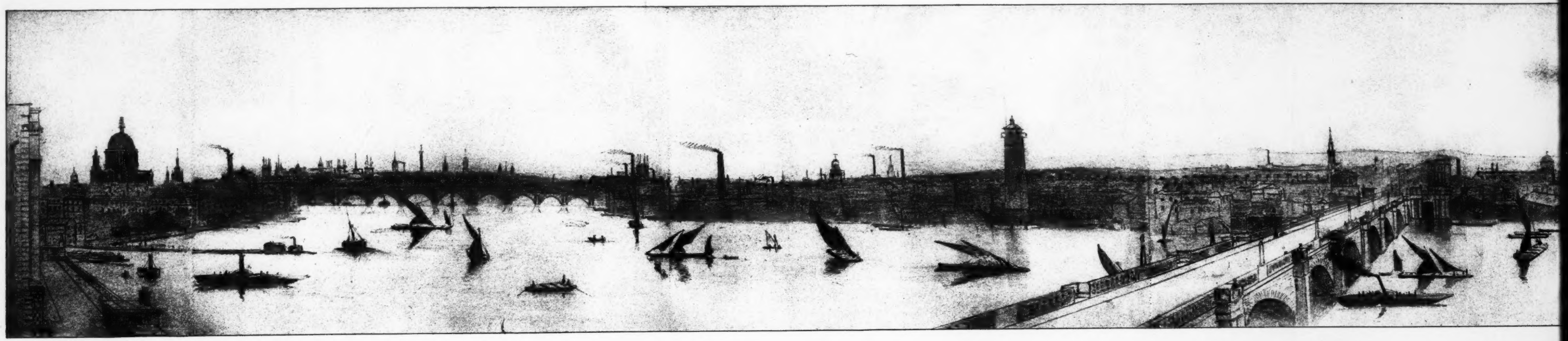
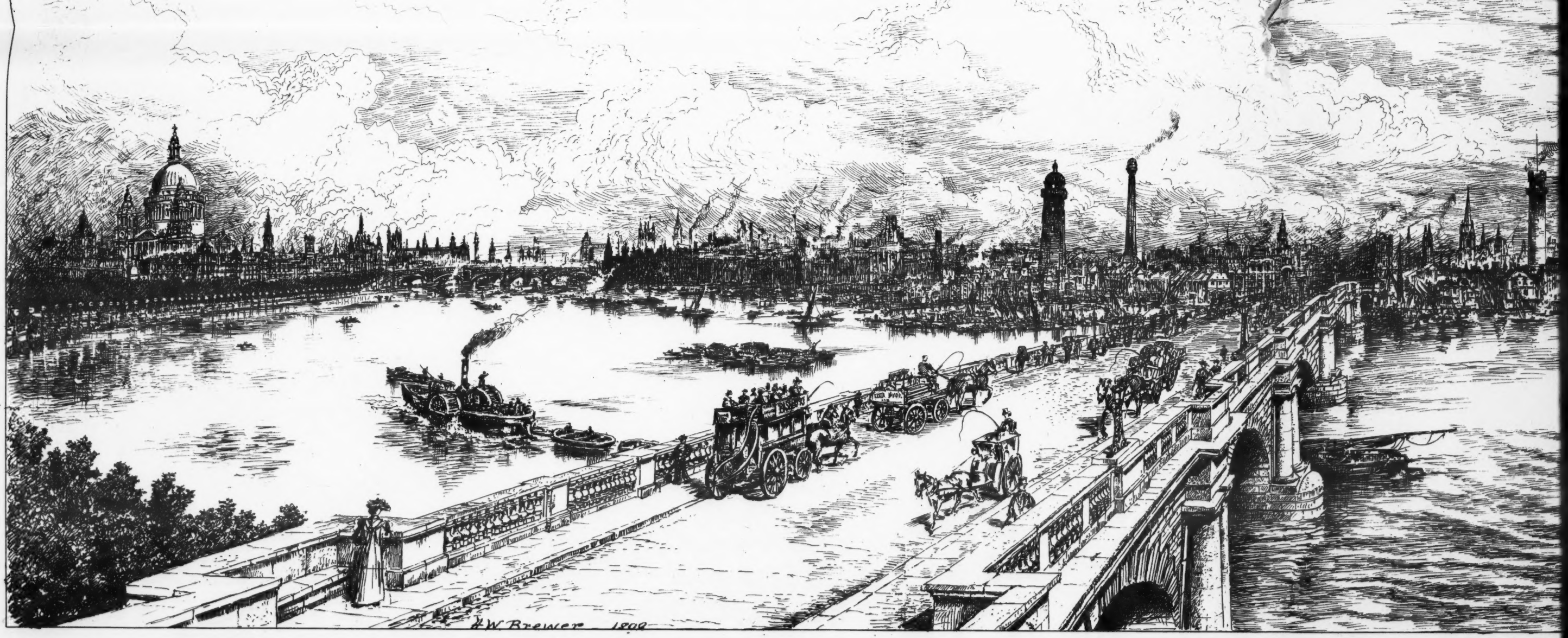
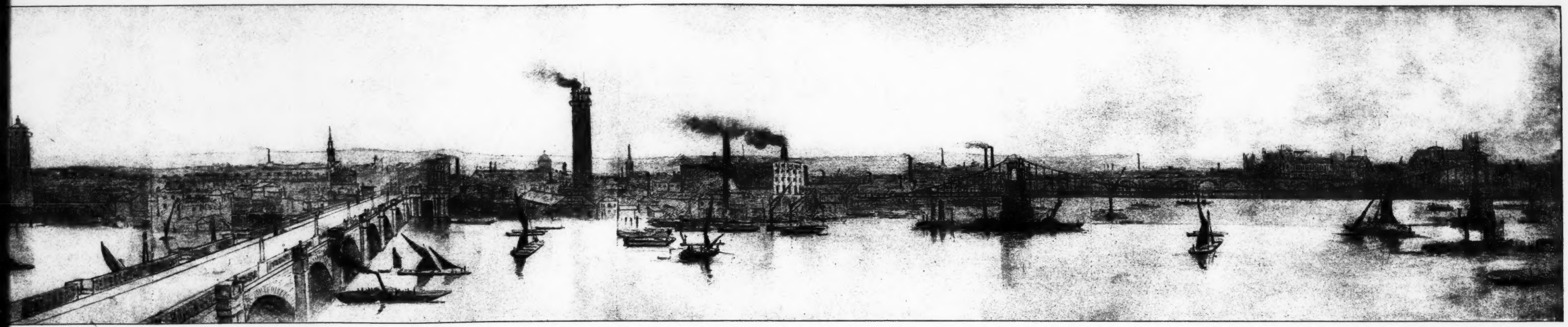


VIEW FROM A POINT NEAR WATERLOO BRIDGE IN 1848: FROM A SKETCH MADE ON

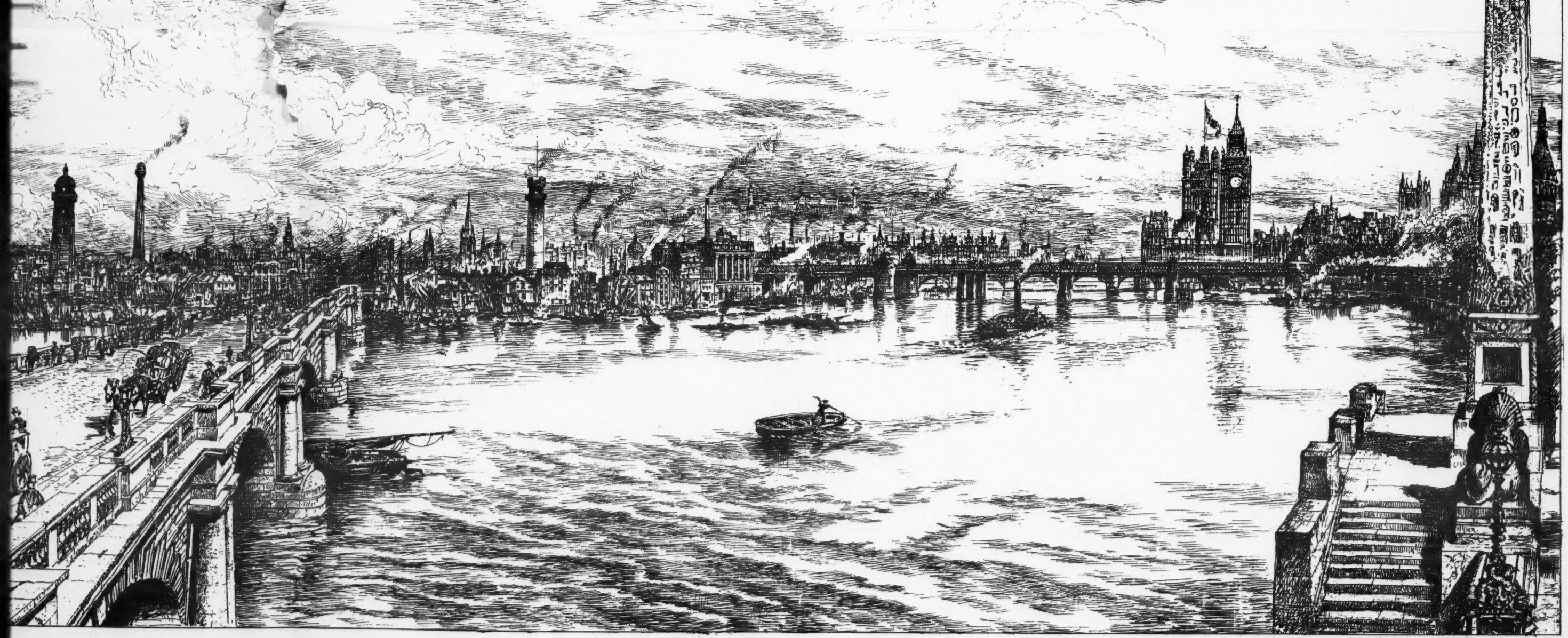


VIEW FROM THE SAME POINT IN 1898: BY Mr H. W. BREW

A HALF-CENTURY'S CHANGE IN LONDO



WATERLOO BRIDGE IN 1848: FROM A SKETCH MADE ON THE SPOT BY "M.D" JULY, 1848.



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